AD-A073 341 METEOROLOGY INTERNATIONAL INC MONTEREY CALIF F/G 4/2
DEVELOPMENT OF A SYNOPTIC CLIMATOLOGY OF TROPOSPHERIC REFRACTIV--ETC(U)
APR 77 P P KALINYAK N00228-76-C-3139
UNCLASSIFIED MII-M-226 NEPRF-TR-2-77 (MII) NL

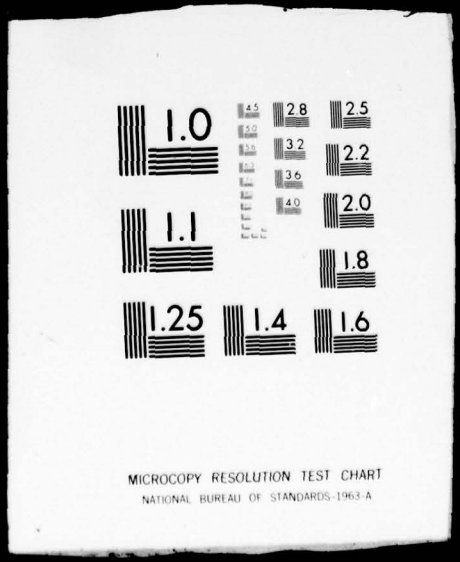
1 OF 3
AD A073 341






1 OF 3

AD
A073341



(2) LEVEL II

AD A073341

DDC
RECEIVED
AUG 29 1979
B

DDC FILE COPY

METEOROLOGY INTERNATIONAL
INCORPORATED

MONTEREY, CALIFORNIA

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

79 08 28 048

DISCLAIMER NOTICE

/

THIS DOCUMENT IS BEST QUALITY PRACTICABLE. THE COPY FURNISHED TO DDC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

(2) LEVEL II

(18) NEPRF TR-2-77(MII)

(17) ≠

(11) April 1977

(9) Final Report

(12) 180 p.

Meteorology International Incorporated

(14) MII Project M-226

(6)

DEVELOPMENT OF A SYNOPTIC CLIMATOLOGY OF TROPOSPHERIC REFRACTIVE CONDITIONS FOR THE EASTERN PACIFIC OCEAN OFF THE WEST COAST OF THE UNITED STATES.

Tasks One and Two.

Task One: Statistical Organizations of the Refractive Conditions, by Monthly Periods and Latitude Zones.

Task Two: The Persistence of Refractive Conditions, and Transition Probabilities.

DDC
RECEIVED
AUG 29 1979
B

(10) by

Paul P. Kalinyak

Prepared for:

The Commanding Officer
Naval Environmental Prediction Research Facility
Monterey, California 93940

(15) Contract No. N00228-76-C-3139

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

79 08 28 048
227450

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER NEPRF Technical Report 2-77(MII)	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) DEVELOPMENT OF A SYNOPTIC CLIMATOLOGY OF TROPOSPHERIC REFRACTIVE CONDITIONS FOR THE EASTERN PACIFIC OCEAN OFF THE WEST COAST OF THE UNITED STATES Task One and Task Two		5. TYPE OF REPORT & PERIOD COVERED Final 6. PERFORMING ORG. REPORT NUMBER MII-M-226
7. AUTHOR(s) Paul P. Kalinyak		8. CONTRACT OR GRANT NUMBER(s) N00228-76-C-3139
9. PERFORMING ORGANIZATION NAME AND ADDRESS Meteorology International Incorporated 205 Montecito Avenue Monterey, California 93940		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Commander, Naval Air Systems Command Department of the Navy Washington, D. C. 20361		12. REPORT DATE April 1977 13. NUMBER OF PAGES 174
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office) Naval Environmental Prediction Research Facility Monterey, California 93940		15. SECURITY CLASS. (of this report) UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Refractive Index
Climatology
Eastern Pacific Ocean
Classification of Refractive Conditions
Persistence and Transition Probabilities

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The work required to develop a synoptic climatology of refractive conditions which significantly affect the tropospheric propagation of electromagnetic waves off the west coast of the United States is to be carried out under three tasks. This Report, for Tasks One and Two, presents a monthly climatology and statistical analysis of refractive conditions for the area 29° N-51° N, 120° W-140° W based on upper-air soundings recorded by radar picket ships. Statistical summaries are given, in the form of tables and histograms, for various parameters associated with surface ducts, non-surface ducts, super-refractive layers, and sub-refractive layers. These parameters include measures of persistence and transition probabilities in space and time.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED 227450

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

TABLE OF CONTENTS

			Page
1.	INTRODUCTION		1
2.	THE DATA BASE		3
3.	THE REFRACTIVE PARAMETERS AND PROFILE CLASSIFICATIONS		4
	3.1	Definition of Parameters	4
	3.2	Classification of Refractive Conditions	8
	3.2.1	Profile Conditions Classified According to Layer Categories	8
	3.2.2	Profile Conditions Classified by Continuous Parameters	10
4.	PROCESSING THE DATA BASE		15
	4.1	Analysis of the Data for Errors	15
	4.2	Data Base Reformatting and Sorting	15
	4.3	The Time: Latitude Distribution of Profiles	17
5.	STATISTICAL COMPILATIONS		18
	5.1	Establishment of Latitude Zones for the Statistical Analysis	18
	5.2	Statistical Development of the Monthly Climatology of Refractive Conditions (Task One)	19

Section
Section
JUSTIFICATION
BY
DISTRIBUTION/AVAILABILITY CODES
Dist. AVAIL and/or SPECIAL
A 23

TABLE OF CONTENTS (Continued)

		Page
5.3	Statistical Development of Persistence and Transition Probabilities for Refractive Conditions (Task Two)	22
5.4	Description of Tables and Figures	24
5.4.1	Monthly Mean Values for Non-Surface Ducts . . .	24
5.4.2	Monthly Mean Values for Surface Ducts	24
5.4.3	Monthly Mean Values for Super-Refractive Conditions	24
5.4.4	Monthly Mean Values for Sub-Refractive Conditions	25
5.4.5.1	Percentage Frequency Distribution of Trap Base Heights	25
5.4.5.2	Percentage Frequency Distribution of Trap Thicknesses	25
5.4.6.1	Percentage Frequency Distribution of Duct Base Heights	25
5.4.6.2	Percentage Frequency Distribution of Duct Thicknesses	26
5.4.7.1	Percentage Frequency Distribution of the Base Heights of Super-Refractive Layers	26
5.4.7.2	Percentage Frequency Distribution of the Thicknesses of Super-Refractive Layers	26
5.4.8.1	Percentage Frequency Distribution of the Base Heights of Sub-Refractive Layers	26
5.4.8.2	Percentage Frequency Distribution of the Thicknesses of Sub-Refractive Layers	26
5.4.9	Statistical Summaries for the Categories of Refraction	27
5.4.10	Seasonal Distribution of Parameter S and Parameter D	28

TABLE OF CONTENTS (Continued)

		Page
5.4.11	Comparison of the Distributions of Parameters S and D in Adjacent Latitude Zones	28
5.4.12	Transition and Persistence Probabilities for Parameters S and D with Time	30
5.5	Potential Uses of the Statistical Compilations	32
APPENDIX		170
	CDC 3100 Refractive Index Format	171
	CDC 6500 Refractive Index Format	172
	Standardized Format for RI Data	173
	Basic Flow Chart of Computer Program Used to Produce the Monthly Climatologies of Refractive Conditions	174

1. INTRODUCTION

The Naval Environmental Prediction Research Facility (NEPRF) has collected a data base of upper-air soundings recorded by radar picket ships off the west coast of the United States; the data base relates to the period October 1956 through June 1965, and the area 29°-51°N, 120°-140°W. Under the terms of Contract No. N00228-76-C-3139, this data base is to be used to develop a synoptic climatology of refractive conditions significantly affecting the tropospheric propagation of electromagnetic waves. The development is to be carried out in accordance with the following three Tasks:

Task One: Monthly climatology of refractive conditions

a. Define for each month the mean number of days during which given refractive structures, thicknesses and intensities can be expected.

b. Define a monthly measure of variability (variance and standard deviations) for each of the indicated conditions.

Task Two: Persistence of refractive conditions, and transition probabilities

a. Determine mean number of days for which a given refractive condition can be expected to persist and the variability of such persistence.

b. Determine the probabilities of transition from one state to another during periods of 12 and 24 hours; i.e., normal propagation to trapping, super-refraction to normal, etc.

Task Three: Typical synoptic patterns, frequency, persistence and transition probabilities. Development of a capability to assess refractive structures from synoptic patterns in terms of the probability of the existing of trapping, super-refractive or sub-refractive layers, probable thickness of such layers, the probable intensity of the layers and a probability estimate (forecast) of the persistence of such layers.

This Technical Report presents the monthly climatology of refractive conditions developed in accordance with Task One, and measures of the persistence and transition probabilities developed in accordance with Task Two.

2. THE DATA BASE

The data available for the development of the required climatology was in one of two different forms:

a. CDC 3100 Refractive Index Format

This stemmed from data held on magnetic tape by the National Record Center in the 505 and 645 format, containing standard level and significant level information for about 15% of the picket ship radiosonde reports. This data was processed by NEPRF on a CDC 3100 computer to obtain the refractive conditions of each layer and the results recorded on magnetic tape. The format of this refractive index information is shown in the Appendix.

b. CDC 6500 Refractive Index Format

As indicated above, only about 15% of the total picket ship data was readily available on magnetic tape. The other 85% was in the form of plotted soundings. These were digitized and then processed on a CDC 6500 computer to obtain the refractive conditions of each layer. The results were recorded on magnetic tape in the format shown in the Appendix.

As part of the overall data processing procedure the data base was converted to a common format. This was combined with the correction of errors in the data base and is discussed in Section 4.

3. THE REFRACTIVE PARAMETERS AND PROFILE CLASSIFICATIONS

3.1 Definition of Parameters

The parameter N is simply a transformation of the variable speed, v, of the electromagnetic propagation in the atmosphere:

$$N \equiv 10^7 \left(\frac{c}{v} - 1 \right) \tag{1}$$

where the constant c is the speed in a vacuum. The formula applied to calculate N for each reported level of a sounding takes the following form:

$$N = 776 \frac{P}{T} + 3.73 \times 10^6 \frac{e}{T^2} \tag{2}$$

where P is the pressure in mbs, e is the partial pressure in mbs due to water vapor, and T is the temperature in degrees Kelvin.

N may be transformed into a parameter M:

$$M \equiv N + 1.57\ H \tag{3}$$

where H is height above sea level in meters. This new parameter merely shifts the value of the vertical derivative:

$$\frac{dM}{dH} \equiv \frac{dN}{dH} + 1.57 \quad . \tag{4}$$

The variable speed of propagation can be recovered from parameter N:

$$v = \frac{c}{1 + 10^{-7} N} \quad . \tag{5}$$

The instantaneous direction of propagation of an infinitesimal element of an electromagnetic wavefront is defined by the positive normal to the wavefront. A ray may be defined as the trajectory of such an element. The trajectory is largely determined by the process of refraction. The governing equation for the tracing of a ray in a two-dimensional vertical plane of the atmosphere may be expressed by

$$\frac{d\gamma}{ds} = \frac{\cos\gamma}{R+H} + \frac{1}{v}\frac{\partial v}{\partial n} \tag{6}$$

where the angle γ defines the direction of propagation measured positive counter-clockwise from the local horizontal, R is the earth's radius at local sea level, s is the linear measure along the trajectory, and n is the linear measure along the wavefront, with positive being to the right of the trajectory. The first of the two terms on the right-hand side determines the apparent bending of the ray due to the curvature of the reference horizontal. The second term determines the rate of refraction.

The curvature term can be eliminated by introducing a modified speed parameter:

$$v_r \equiv \frac{R}{R+H}\, v \quad . \tag{7}$$

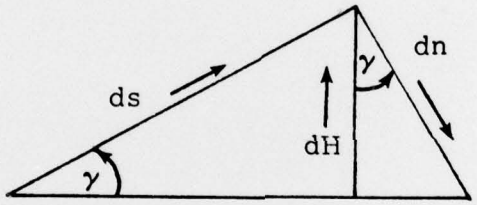
Substitution for v in Eq. (6) and using $\cos\gamma = -dH/dn$ (see Fig. 1) yields:

$$\frac{d\gamma}{ds} = \frac{1}{v_r}\frac{\partial v_r}{\partial n} \quad . \tag{8}$$

The speed v generally has a much greater variability with height in the atmosphere than it has in any horizontal plane. In applications for which the horizontal variations are negligible, v may be treated as a function of height only. The modified speed v_r is then also a function of height only, and Eq. (8) may be transformed into a perfect differential, producing Snell's law:

$$\frac{\cos \gamma}{v_r} = \text{constant along any one ray} \quad . \tag{9}$$

This transformation into Snell's law is readily produced by use of the relationships shown in Fig. 1.



$$dn = -\frac{dH}{\cos \gamma} \qquad ds = \frac{dH}{\sin \gamma}$$

Figure 1. Relationships between the Local Differentials

Thus, Eq. (8) yields

$$\sin \gamma \frac{d\gamma}{dH} = -\frac{1}{v_r} \frac{dv_r}{dH} \cos \gamma$$

which is the perfect differential along the ray

$$\frac{d}{dH}\left(\frac{\cos\gamma}{v_r}\right) = 0 \quad .$$

All classifications of the refractive conditions of atmospheric profiles are based on a layered atmospheric structure. Each reported pressure level defines an interface between layers, and v_r is approximated to be linear in H between evaluations at successive interfaces.

That section of a ray which falls into an atmospheric layer for which $dv_r/dH = 0$, appears to have no bending in the horizontal frame of reference. If dv_r/dH is positive or negative then the ray appears to bend downward or upward, respectively, defining a circular arc in its transit of the layer.

Differentiation of Eq. (7) with height yields

$$\frac{dv_r}{dH} = \frac{R}{R+H}\frac{dv}{dH} - \frac{R}{(R+H)^2}v \approx \frac{dv}{dH} - \frac{c}{R} \quad . \tag{10}$$

Differentiation of Eq. (1) with respect to height yields

$$\frac{dN}{dH} = -10^7\frac{c\,dv}{v^2\,dH} \approx -\frac{10^7}{c}\frac{dv}{dH} \quad . \tag{11}$$

The relationship between dM/dH and dN/dH is given by Eq. (4). Equations (4), (10) and (11) interrelate the four differently-scaled measures of the vertical derivative of the electromagnetic speed of propagation.

3.2 Classification of Refractive Conditions

3.2.1 Profile Conditions Classified According to Layer Categories

Profiles may be classified according to the refractive categories of the component layers.

The United States Navy has separated the possible refractive conditions of layers of the atmosphere into four discrete categories which are termed trapping (ducting), super-refractive, normal, and sub-refractive conditions. For example, trapping conditions exist in a layer of the atmosphere if the gradient of N with height is less than -1.57 *meters*$^{-1}$ *or* equivalently if

$$\frac{10^7}{c} \frac{dv_r}{dH}$$

is greater than zero.

Table 1 shows the demarcation values for each of the four discrete categories in terms of the four vertical derivatives of speed.

The demarcation between Trapping and Super-Refraction corresponds to zero apparent refraction in the horizontal frame of reference. The other two demarcations separate ranges of upward refraction.

Table 1

Demarcation Values Associated with the Vertical Speed Derivatives for the Four Categories of Refractive Conditions

Vertical Derivative	Trapping	Super-Refraction	Normal	Sub-Refraction
$\frac{10^7}{c}\frac{dv_r}{dH}$	⟷	0 ⟷	-0.79 ⟷	-1.57 ⟷
$\frac{10^7}{c}\frac{dv}{dH}$	⟷	1.57 ⟷	0.79 ⟷	0 ⟷
$\frac{dN}{dH}$	⟷	-1.57 ⟷	-0.79 ⟷	0 ⟷
$\frac{dM}{dH}$	⟷	0 ⟷	0.79 ⟷	1.57 ⟷

3.2.2 Profile Conditions Classified by Continuous Parameters

A technique for representing the refractive conditions of a profile is to separate it into layers, the vertical extent of each layer being determined by the appropriate demarcation values given in Table 1. Thus each layer is assigned to one of the four discrete categories. Although such a discontinuous representation can be detailed and is operationally significant, it nevertheless lacks the continuity desirable for some aspects of our investigations.

We therefore have designed two continuous parameters as supplementary definitions of the refractive conditions of a profile. Parameter S is a measure of the strength of surface ducting or of the proximity to surface ducting. Parameter D is a measure of the strength of total tropospheric ducting or of the proximity to ducting.

The definition of the parameter S is

$$S \equiv \frac{10^7}{c} \frac{1}{H_*} \left(v_{r,i} - v_{r,o} \right) \quad \text{provided} \quad v_{r,i} > v_{r,o} \tag{12}$$

where $v_{r,o}$ is the surface value of the modified speed profile, v_r, and $v_{r,i}$ is the maximum value in the profile above the surface. H_* is a specified scaling height. The extension of the definition in the case of no surface duct, i.e., if $v_{r,o}$ is the maximum speed in the profile, is

$$S \equiv \frac{10^7}{c} \left(\frac{v_{r,i} - v_{r,o}}{H_i} \right)_{\max} \quad \text{where} \quad v_{r,i} < v_{r,o} \tag{13}$$

and H_i is the height of level i. This extension gives a measure of the proximity of the profile to a surface duct situation. This negative extension

of S is not necessarily related to the bottom layer defined by the first reported level (i = 1) above the surface; the maximum may occur for i = 2 or higher. The interpretation of a negative value of S is the same as for the first row of demarcations given in Table 1.

A positive value of S is interpreted by application of Snell's law for the limiting ray at the surface:

$$\text{(Limit)} \quad \cos \gamma_o = \frac{v_{r,o}}{v_{r,i}}$$

$$= 1 - \frac{v_{r,i} - v_{r,o}}{v_{r,i}} \approx 1 - \frac{v_{r,i} - v_{r,o}}{c}$$

$$\approx 1 - 10^{-7} H_* S \quad . \tag{14}$$

The larger is S the greater is the limiting angle for surface ducting.

The total tropospheric ducting parameter D is similar to S except that it need not be surface based:

$$D \equiv \frac{10^7}{c} \frac{1}{H_*} \left(v_{r,j} - v_{r,i} \right)_{max} \tag{15}$$

provided $v_{r,j} > v_{r,i}$ and $j > i$.

$$D \equiv \frac{10^7}{c} \left(\frac{dv_r}{dH} \right)_{max} \tag{16}$$

for no ducting.

The interpretation of D for no ducting, that is for D negative, is the same as the first row of Table 1. A positive value of D is interpreted by application of Snell's law for the limiting ray at level i:

$$\text{(Limit)} \quad \cos \gamma_i = \frac{v_{r,i}}{v_{r,j}}$$

$$= 1 - \frac{v_{r,j} - v_{r,i}}{v_{r,j}} \approx 1 - \frac{v_{r,j} - v_{r,i}}{c}$$

$$\approx 1 - 10^{-7} H_* D \quad . \tag{17}$$

For the purpose of presenting the statistics of persistence* and transition, it is convenient to establish discrete categories for the S and D parameters. These are shown in Table 2, together with the first row of Table 1 for comparison purposes.

*Persistence probabilities are a sub-set of transition probabilities; i.e., that sub-set where no transition from one refractive category to another occurs in the space-time envelope under consideration.

Table 2

Discrete Categories of the S and D Parameters

Vertical Derivative/ Parameter	Trapping/Ducting			Super-Refraction		Normal (N)
	Strong (DS)	Moderate (DM)	Weak (DW)	Strong (SS)	Weak (SW)	
$\frac{10^7}{c}\frac{dv_r}{dH}$	←		→ 0 ←		→ -0.79 ↔	-1.57
S	← → 0.79 ←	→ 0.40 ←	→ 0 ←	→ -0.40 ↔	-0.79 ←	
D	← → 0.79 ←	→ 0.40 ←	→ 0 ←	→ -0.40 ↔	-0.79 ←	

The S and D parameters, calculated in accordance with Eqs. (12), (13), (15) and (16), are a measure of the most positive/least negative values. As a consequence, no values of S and D corresponding to sub-refractive conditions were ever observed.

Every profile provides a value for S and a value for D. Because D is determined from the whole profile, whereas S is only applicable to the surface, the values of S and D will coincide if the base of the most positive/least negative layer is at the earth's surface. However, if this layer is aloft, then the profile will give different values for S and D.

For ducting/trapping conditions (eqs. (12), (15)) the parameters S and D are directly related to the limiting rays (Eqs. (14), (17)). The quantity H_* is included in the definition of positive S and D values, not in order to express them as gradients, but to express them in a scale similar to their negative definitions.

4. PROCESSING THE DATA BASE

4.1 Analysis of the Data for Errors

After construction of a data listing, the position given with each report was plotted; those reports which either fell over land, were too close to land, or which were geographically remote from other reports, were considered suspect. Such reports were checked by a variety of methods including reference to the original plotted soundings. A search was made for duplicate reports for subsequent elimination. The maximum and minimum base levels and thicknesses of refractive layers were extracted and suspect extreme values checked. Finally a cross-check was made of the positions and date-times of the reports on the plotted soundings against the same information held on magnetic tape after digitization.

The errors revealed by this search, and the associated corrective procedures, are tabulated in Table 3.

4.2 Data Base Reformatting and Sorting

As explained in Section 2, the basic data was held in one of two different formats. A third format, more appropriate to the investigation, was devised and conversion programs were written and run for each data set. The final format of the data base is shown in the Appendix. The reformatting programs corrected the errors in the data base revealed by the error search (see Section 4.1) and also computed and incorporated the S and D parameters (see Section 3.2.2).

The reformatted data was then sorted and merged into a single data base, including the S and D parameters. The basic ordering of the data was by time, by latitude and then by longitude. The merged and sorted

Table 3

Data Base Errors and Corrections

Corrections to 3100 Tape

Original Number			985	
Corrections to Latitude	1			
Corrections to Data	15			
Bad Data--Eliminated		1		
Duplicates--Eliminated		8		
Number Eliminated			9	
Number Retained				976

Corrections to 6500 Tape

Original Number			5987	
Corrections to Latitude/Longitude	68			
Corrections to Date	138			
Corrections to Ship Number	9			
Corrections to Data	10			
Bad Reports (No matching Plotted Soundings)--Eliminated		10		
Bad First Levels--Eliminated		16		
Duplicates--Eliminated		15		
Number Eliminated			41	
Number Retained				5946
Total Number Retained				6922

data base contained 6922 profiles (00Z or 12Z only) on magnetic tape in the format shown in the Appendix. These profiles provided the input to the statistical analysis described in Section 5.

4.3 The Time: Latitude Distribution of Profiles

Figures 2 through 6 show the chronological distribution of profiles in the data base as a function of latitude; each figure shows the data for two years. Time is shown along the abscissa, the numbers above the months being the number of profiles for that month. Latitude is shown along the ordinate to the nearest 0.1° of latitude. Individual reports are indicated by a short vertical line centered on the time-latitude coordinates of the report. The numbers between whole latitude lines are the number of profiles for that degree of latitude for the two-year period. The numbers appearing between the latitude lines on the right-hand side of Fig. 6 give the total number of *profiles occurring* in that latitude band for the 10-year period of the data base.

5. STATISTICAL COMPILATIONS

5.1 Establishment of Latitude Zones for the Statistical Analysis

In order to detect latitudinal variations in refraction conditions, it was necessary to separate the profiles in the data base into latitude zones. The demarcation latitudes selected (29.0°N, 34.5°N, 37.5°N, 41.0°N, 46.0°N, 51.0°N) were a compromise involving several considerations such as:

a. having a reasonable number of profiles in each zone, these profiles also being representative in time;

b. having roughly equal zone sizes;

c. minimizing the number of reports actually on the selected lines of demarcation;

d. minimizing the movement of ships (making regular reports) across the selected lines of demarcation;

e. avoiding concentrations of data near the zone boundaries.

The compromise was effected by plotting the number of reports occurring in 0.5° latitude x 0.5 longitude areas for each month and for all months combined, and considering these plots (Figs. 7 through 19) in conjunction with Figs. 2 through 6. On Figs. 7 through 19, the finally-selected demarcation latitudes are shown as dashed lines; the numbers along the ordinate between the latitude digits are the number of reports in that zone for that month, and the number at the bottom-left of the figures is the total number of reports for all zones.

5.2 Statistical Development of the Monthly Climatology of Refractive Conditions (Task One)

Because of the operational significance of surface ducting, surface and elevated ducts have been considered as separate categories. The following table shows the parameters used to specify each significant category of refraction:

Table 4

Specifying Parameters for the Discrete Categories of Refraction

Non-Surface Ducts	Surface Ducts	Super-Refractive Layers	Sub-Refractive Layers
Trap Base Height	Trap Base Height	Base Height	Base Height
Trap Thickness	Trap Thickness	Thickness	Thickness
Trap Gradient	Trap Gradient	Gradient	
Duct Thickness	Duct Thickness		
Duct Base			

The following definitions are relevant to the specifying parameters:

Trapping Layer: A vertical extent in which dM/dH is negative throughout. The full extent of such negative gradient defines one trapping layer. A single profile may include several trapping layers, separated by regions in which dM/dH is positive throughout.

Trap Base Height: The height of the bottom of the trapping layer.

Trap Thickness: Height of the top minus height of the bottom of a trapping layer.

Trap Gradient: The mean gradient, $\overline{dM/dH}$, of a trapping layer.

Duct Base: One duct base corresponds to each trapping layer. For a non-surface-based duct the base is at the first level encountered, in progressing downward from the base of the trapping layer, where the speed equals the speed at the top of the trapping layer. If the surface is encountered before this condition is met then the duct is surface based.

Duct Thickness: Height of the top of a trapping layer minus the height of its duct base. In the case of a surface-based duct, this thickness is the height of the top of the associated trapping layer.

Super-Refractive Layer: A vertical extent in which dM/dH lies between 0 and 0.79 throughout. A single profile may include several super-refractive layers, each having a base height (the lower extent of the layer) a thickness, and a mean gradient.

Sub-Refractive Layer: A vertical extent in which dM/dH is greater than 1.57 throughout. A single profile may include several sub-refractive layers, each having a base height and a thickness.

Table 5 summarizes the parameters and statistical measures used to produce the climatologies of refractive conditions developed in accordance with the requirements of Task One.

Table 5

Parameters and Statistical Measures Used in
Developing the Monthly Climatologies of Refractive Conditions

Statistical Measures	mean, standard deviation, percentage frequency of occurrence	3
Specifying Parameters	see Table 4	14
Months	12 calendar months plus 1 all-months category	13
Times	00Z and 12Z, plus 00Z & 12Z combined	3
Latitude Zones	5 zones plus 1 all-zones category	6

The various charts and tables used to present the monthly climatologies of refractive conditions are described in Section 5.4.

Note:

a. With reference to Table 4, a single profile may contain any number (within reason) of surface ducts, non-surface ducts, super-refractive layers and sub-refractive layers, and these may all co-exist in a given profile.*

b. With reference to Table 5, the statistics for 00Z and 12Z were produced separately and in combination to detect diurnal biases.

c. The basic flow chart of the computer program used to produce the monthly climatologies of refractive conditions is given in the Appendix.

*See Table 20.

5.3 Statistical Development of Persistence and Transition Probabilities for Refractive Conditions (Task Two)

The statistics for the probability of transition, from one category of refraction to another, including the percentage frequency of occurrence, were developed using the S and D parameters defined and discussed in Section 3.2.2. Transition (or persistence) probabilities between the six discrete categories of refraction for these parameters laid down in Table 2 were determined by considering changes either in space or in time, but not space-and-time. For detecting any seasonal variations the year was divided into four quarters designated Winter, Spring, Summer and Fall, but no true seasonal regime changes should be inferred.

Spatial transition probabilities were determined between adjacent latitude zones for a constant time; temporal transition probabilities were determined in each latitude zone, including one all-zones category, for 12 hours and 24 hours in the future based on starting times of 00Z and 12Z.

Table 6 summarizes the parameters and statistical measures used in developing the required transition/persistence probabilities. Specific details of the method used for the compilation of each set of statistics are given in Section 5.4.

Table 6

Parameters and Statistical Measures Used in Developing the Statistics of Transition and Persistence

Statistical Measures	number of profiles, percentage frequency of occurrence, cumulative percentage frequency of occurrence	3
Specifying Parameters	S and D, each with 6 discrete categories of refraction; i.e., DS, DM, DW, SS, SW and N. (See Section 3.2.2 and Table 2)	12
Period	4 quarters of the year:	
	January through March ("Winter")	
	April through June ("Spring")	
	July through September ("Summer")	
	October through December ("Fall")	4
Times (for temporal transition probabilities)		
	00Z compared with 00Z +12 hours and 00Z +24 hours	
	12Z compared with 12Z +12 hours and 12Z +24 hours	4
(Temporal transition probabilities were determined within each of the 5 latitude zones, plus 1 all-zones category.)		(6)
Latitude Zones (for spatial transition probabilities)		
	5 latitude zones, each compared with the latitude zone to the north (4) and to the south (4)	8
(Spatial transition probabilities were determined for simultaneous occurrences only.)		(1)

5.4 Description of Tables and Figures

This section described the format of the tables and figures used to present the statistical summaries of refractive conditions.

5.4.1 Monthly Mean Values for Non-Surface Ducts

Figures 20 through 24 show the mean values of the five specifying parameters for non-surface ducts (see Table 4). Each figure contains six histograms, one for each latitudinal zone and one for all-zones combined--the top-right histogram in each figure. The relevant latitudes are written along the right-hand edge of each histogram. The ordinate shows either height, thickness or gradient; the units of height and thickness are meters, and the units of gradient are M units per 100 meters. Mean values are given for 00Z, 12Z, and combined 00Z & 12Z. NS refers to the number of available soundings and is given for each calendar month and all-months. N refers to the number of occurrences of the specifying parameter for each time and latitude zone. Note that more than one of these occurrences may have been contributed by an individual sounding (see Section 5.2).

5.4.2 Monthly Mean Values for Surface Ducts

Figures 25 through 28 show the mean values of the four specifying parameters for surface ducts (see Table 4). See Section 5.4.1 for description of contents of these four figures.

5.4.3 Monthly Mean Values for Super-Refractive Conditions

Figures 29 through 31 show the mean values of the three specifying parameters for super-refractive layers (see Table 4). See Section 5.4.1 for description of contents of these three figures.

5.4.4 Monthly Mean Values for Sub-Refractive Conditions

Figures 32 and 33 show the mean values of the two specifying parameters for sub-refractive layers (see Table 4). See Section 5.4.1 for description of contents of these two figures.

5.4.5.1 Percentage Frequency Distribution of Trap Base Heights

Figures 34 through 39 show the percentage frequency distribution of trap base heights for all occurrences of trapping, both non-surface and surface based. Each figure, one for each latitude zone, and one for all-zones combined, shows thirteen histograms, one for each calendar month and one for all-months combined. In each histogram the ordinate is the base height of the trap in meters; the abscissa is the percentage frequency. The latter was evaluated for each height interval as a percentage of the total occurrences of trapping for that particular month and latitude zone. Thus, for example, referring to the June histogram in Fig. 34, of all the recorded occurrences of trapping layers in June 1957-1965 between the latitudes of 29.0° and 34.5°N, 10% of them had base heights of 250-500 meters.

5.4.5.2 Percentage Frequency Distribution of Trap Thicknesses

Figures 40 through 45 are basically similar to those described in Section 5.4.5.1, the difference being that each ordinate shows the percentage frequency distribution of the thicknesses of the traps rather than the base heights.

5.4.6.1 Percentage Frequency Distribution of Duct Base Heights

Figures 46 through 51 are similar to those described in Section 5.4.5.1 but show the percentage frequency distribution of the heights of the duct base.

5.4.6.2 Percentage Frequency Distribution of Duct Thicknesses

Figures 52 through 57 are similar to those described in Section 5.4.5.1 but each ordinate shows the percentage frequency distribution of the thicknesses of the ducts.

5.4.7.1 Percentage Frequency Distribution of the Base Heights of Super-Refractive Layers

Figures 58 through 63 are similar to those described in Section 5.4.5.1 but show the percentage frequency distribution of the base heights of super-refractive layers.

5.4.7.2 Percentage Frequency Distribution of the Thicknesses of Super-Refractive Layers

Figures 64 through 69 are similar to those described in Section 5.4.5.1 but show the percentage frequency distribution of the thicknesses of super-refractive layers.

5.4.8.1 Percentage Frequency Distribution of the Base Heights of Sub-Refractive Layers

Figures 70 through 75 are similar to those described in Section 5.4.5.1 but show the percentage frequency distribution of the base heights of sub-refractive layers.

5.4.8.2 Percentage Frequency Distribution of the Thicknesses of Sub-Refractive Layers

Figures 76 through 81 are similar to those described in Section 5.4.5.1 but show the percentage frequency distribution of the thicknesses of sub-refractive layers.

5.4.9 Statistical Summaries for the Categories of Refraction

5.4.9.1 Tables 7 through 19 show the means and standard deviations of the fourteen specifying parameters detailed in Table 4.

As an example, consider Table 7. This table is for all January observations and, for each latitude zone and for all-zones combined, the specifying parameters for each discrete category of refraction are listed in the left-hand column. The first three quantities (under "NUMBER") show the number of occurrences of the four discrete categories of refraction. For example, considering the zone 29.0°N to 34.5°N, there were 14 super-refractive layers occurring in all Januaries at 00Z and 19 at 12Z, giving a total of 33. Any particular profile may have had more than one super-refractive layer, and the next three quantities (under "NUMB RPTS 1 OR MORE") show the number of profiles exhibiting super-refractive layer(s). Thus, in this example, there were 11 profiles with one or more super-refractive layer(s) in all Januaries at 00Z and 14 at 12Z, giving a total of 25.

For this particular sub-table the top line shows there were 24 reports at 00Z and 25 at 12Z, a total of 49. Under "PERCENT RPTS 1 OR MORE" the number of profiles exhibiting super-refractive layers are expressed as percentages of the appropriate number of profiles available. Thus 45% of January profiles in this latitude zone had one or more super-refractive layers at 00Z, 56% at 12Z, and 51% at either 00Z or 12Z.

The three quantities under "MEANS" show the mean values of the specifying parameters at 00Z, 12Z, and 00Z & 12Z combined, the appropriate standard deviations being shown in the final three columns. The means were calculated for all occurrences. Thus, using the same sub-table, the mean height of all 33 super-refractive layers occurring in January profiles for the latitude zone 29.0°N to 34.5°N was 1162 meters with a standard deviation of 798 meters.

Note: In Tables 7 through 19, the term "Intensity" is synonymous with "Mean Gradient"; for trapping conditions the sign of this gradient has been reversed. The units of intensity are M units per 100 meters.

5.4.9.2 Table 20 shows the numbers of occurrences of profiles exhibiting up to six (for each category) co-existing ducts, super-refractive and/or sub-refractive layers.

5.4.10 Seasonal Distribution of Parameter S and Parameter D

Tables 21 through 24 show the seasonal distributions (see Table 6) of the S and D parameters for each of the six latitude zones, 00Z and 12Z reports being shown separately. Values of S and D are shown in terms of the discrete ranges laid down in Table 2.

Thus, for example, Table 21 shows the distribution of Parameter S derived from 00Z reports (profiles). Considering the two sub-tables relating to the latitude zone 29.0°N-34.5°N, the left-hand sub-table shows that in Spring (April through June), there were 170 relevant profiles in the data base. Separation of these 170 profiles into the discrete ranges of refraction gave 93 cases of normal (N) refraction, 39 cases of weak super-refraction (SW), and so on. The right-hand sub-table shows these profiles expressed as a (truncated) percentage frequency of occurrence.

5.4.11 Comparison of the Distributions of Parameters S and D in Adjacent Latitude Zones

Tables 25 through 28 compare the distributions of Parameters S and D in one latitude zone with the corresponding distribution in an adjacent latitude zone.

The sub-set of the data base required for the comparison was determined by considering two adjacent latitude zones and time-matching

the profiles from each zone. Pairs of simultaneously-occurring profiles obtained in this way were used to form the distributions of Parameters S and D in the two latitude zones. Insufficient matched pairs were obtained in each season to provide a statistically-meaningful sample, and therefore the comparative distribution of S and D were derived for all-seasons combined.

As an example, the top-left sub-table in Table 25 shows latitude zone 29.0°N-34.5°N compared with latitude zone 34.5°N-37.5°N for the Parameter S. Addition of the right-hand column of the sub-table (under "TOT") shows that there were 451 corresponding pairs of simultaneously observed profiles. Of these 451 pairs of soundings, 230 profiles fell in the "N" category (*see* Table 2) in latitude zone 29.0°N-34.5°N. The 230 corresponding profiles in latitude zone 34.5°N-37.5°N had the following distribution: N--175 profiles; SW--32 profiles; SS--3 profiles; DW--17 profiles; DM--3 profiles; and SS--0 profiles. The right-hand sub-table shows these profiles expressed as a (truncated) percentage frequency of occurrence.

Considering now Table 26, the top left-hand sub-table shows the same 451 corresponding pairs of simultaneously observed profiles. Of these 451 pairs of soundings, 322 fell into category N in latitude zone 34.5°N-37.5°N. The 322 corresponding profiles in latitude zone 29.0°N-34.5°N had the following distribution: N--175 profiles; SW--83 profiles; SS--23 profiles; DW--21 profiles; DM--10 profiles; and DS--10 profiles. The right-hand sub-table shows these profiles expressed as a percentage frequency of occurrence.

The remainder of the sub-tables in Tables 25 and 26 are similar, comparing the distributions of Parameter S in other adjacent latitude zones. Tables 27 and 28 are similar to Tables 25 and 26, but show the distribution of Parameter D.

Figure 82 is a scattergram for the same 451 pairs of profiles discussed in the above example. The ordinate and abscissa show Parameter S as a continuous variable for the two adjacent latitude zones, the S-values of corresponding pairs of profiles being plotted on the scattergram. Similar figures were plotted for Parameters S and D for all adjacent latitude zones; they are not included in this Report as the tabular format is more informative.

5.4.12 Transition and Persistence Probabilities for Parameters S and D with Time

Tables 29 through 61 show how the observed distributions of Parameters S and D changed (or persisted) in time within the same latitude zone. Tables 29 through 44 refer to Parameter S, while Tables 45 through 60 refer to Parameter D.

The sixteen tables for Parameters S are divided into four sets--one set for each of the four "seasons" (see Table 6). The four tables in each of these sets show the changes in distribution of Parameter S after a time-lapse of 12 hours based on 00Z and on 12Z soundings, and after a time-lapse of 24 hours based on 00Z and on 12Z soundings. The sixteen tables for Parameter D are organized similarly.

The sub-sets of the data base required to determine these changes in distribution were obtained by matching profiles from the base-time with profiles measured 12 or 24 hours later in the same latitude zone.*

As an example of the contents of each table, consider Table 51. This shows the change in distribution of Parameter D over a 24-hour period based on 00Z soundings for April through June. The change in distribution

---

*Almost invariably, these profile-pairs were from soundings made by the same picket ship.

of Parameter D is shown for the five latitude zones and one all-zones combined category. The base-time of the table (in this case 00Z) is shown along the left-hand edge of the three sub-tables given for each latitude zone.

The bottom-left sub-table in Table 51 refers to the latitude zone 29.0°N-51.0°N; i.e., the all-zones-combined category. Summing the number of profiles under "TOT" shows there were 788 profiles in this particular sub-set of the data base. From the values of Parameter D computed from these 788 profiles, 227 (under "TOT") fell into the N category (see Table 2) at 00Z, the base-time of the table. 24-hours later, the corresponding profile distribution was: N--105; SW--61; SS-36; DW--23; DM--2; and DS--0. The other rows of this sub-table show the changes in distribution for the other refractive categories.

The left-hand sub-tables show distributions based on numbers of profiles. In the center sub-table, these numbers have been converted to (truncated) percentage frequencies of occurrence. The right-hand sub-table of each set of three shows cumulative percentage frequencies of occurrence, summed from the right. For example, the bottom-right sub-table of Table 51 shows that for all profiles which were N at 00Z, 24-hours later 100% of the corresponding profiles were N or stronger, 53% were SW or stronger, 26% were SS or stronger, 11% were DW, and there were less than 1% in the DM and DS categories. From the same sub-table it can be seen that, after 24 hours, there is only an 11% chance of initially normal conditions turning into a ducting situation, whereas if there is initially a strong duct, there is a 75% chance that ducting will still be observed after 24 hours.

The contents of the other tables are similar to Table 51.

Figures 83 and 84 show sample scattergrams for Parameters S and D for the latitude zone 29.0°N-34.5°N, all seasons combined, for a time-lapse of 24 hours based on 00Z profiles. Other similar figures were plotted

but have not been included in this Report as the tabular format is more informative.

5.5 Potential Uses of the Statistical Compilations

Various investigations and evaluations of practical use can be based on the statistical compilations and associated presentations contained in this Report. The "pay-off" of such evaluations will depend on the operational context and, to be of maximum benefit, should involve the techniques of operational analysis. The prospective users of the type of information contained in this Report therefore must themselves provide an input to the evaluation process. As the operational significances of the variabilities are appreciated, it will then be possible to modify and condense the presentation formats to show more directly the desired practical relationships between the various parameters determining and affecting refractive conditions.

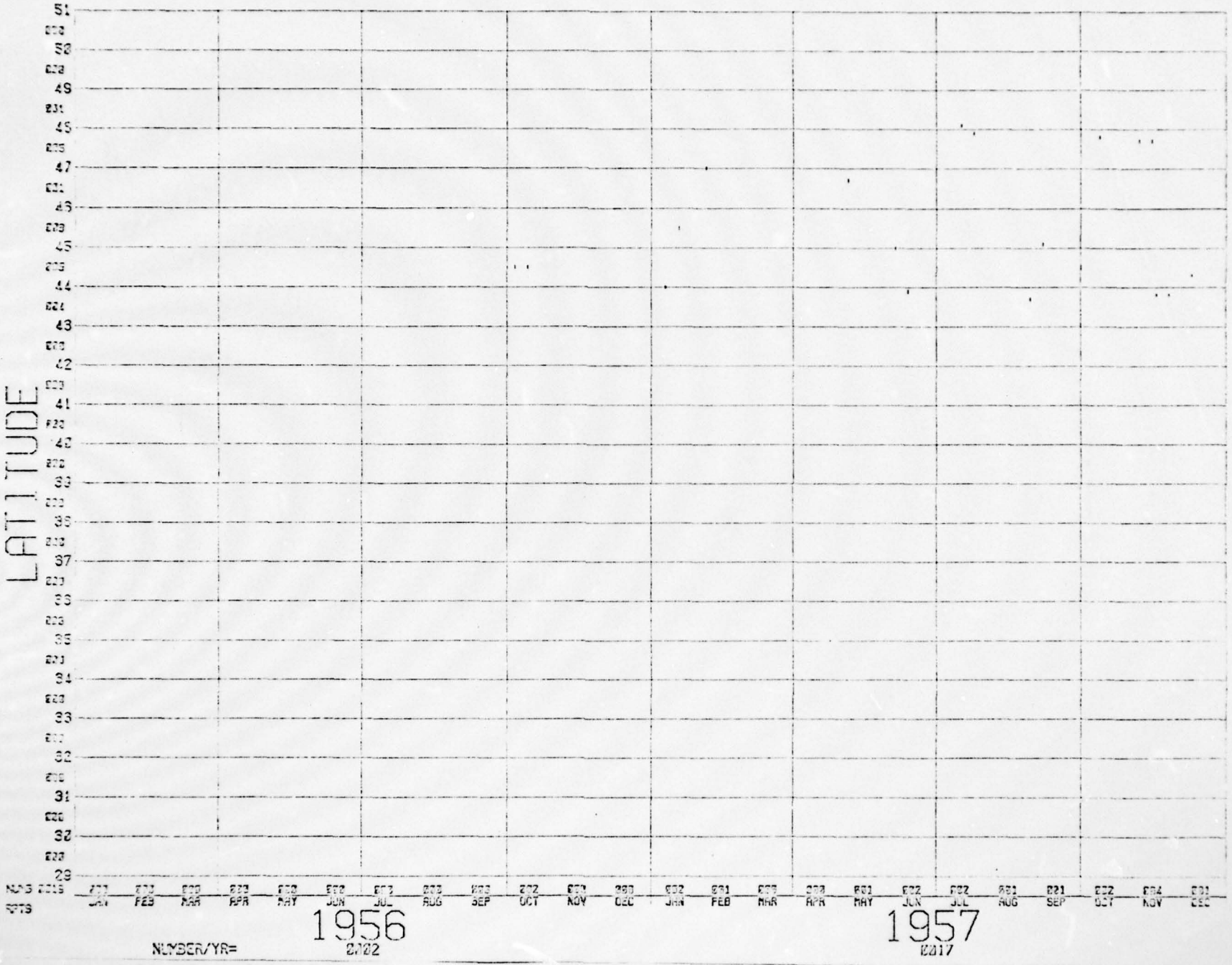


Figure 2. Chronological Distribution of Radiosonde Profiles with Latitude: 1956-1957.

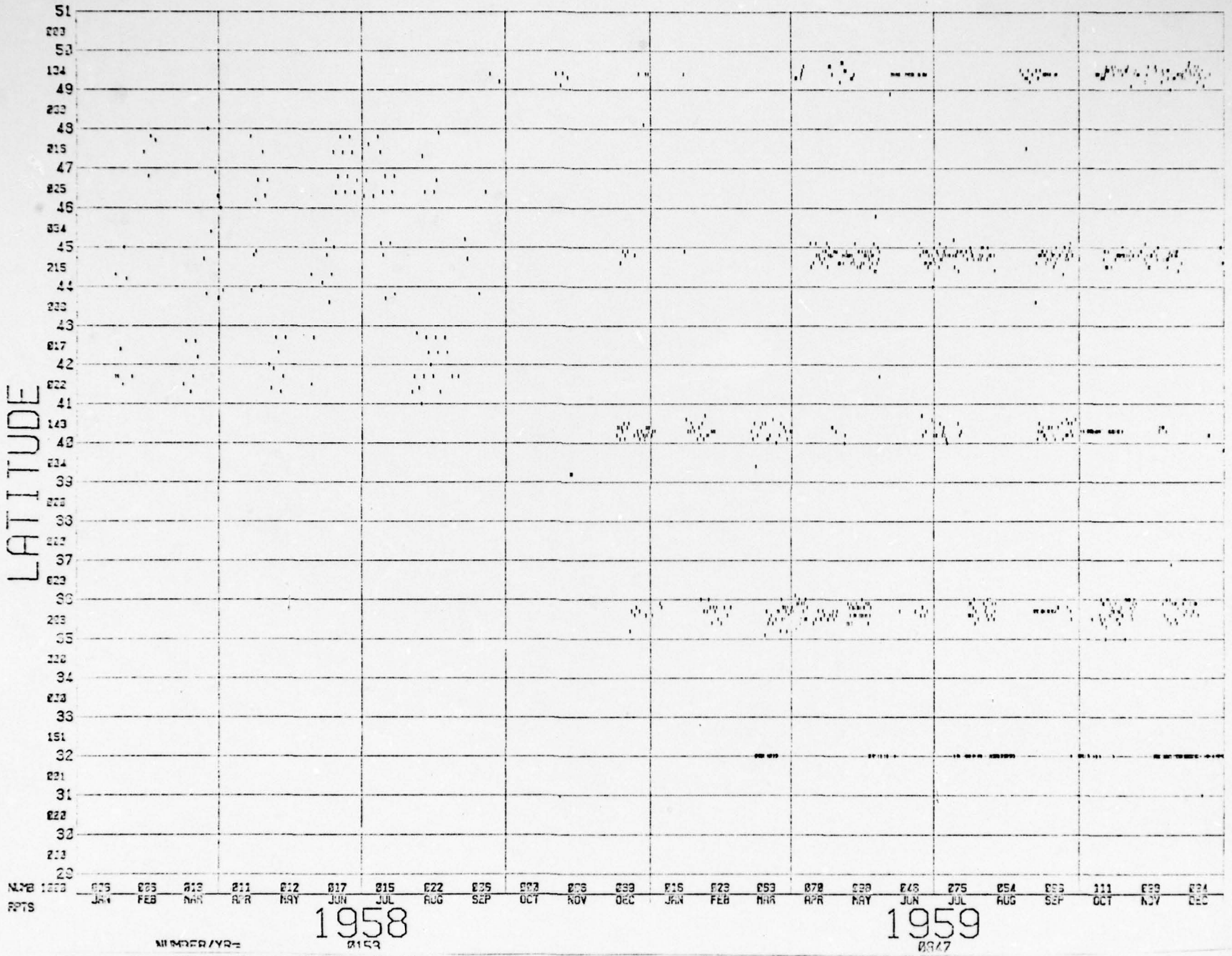


Figure 3. Chronological Distribution of Radiosonde Profiles with Latitude: 1958-1959.

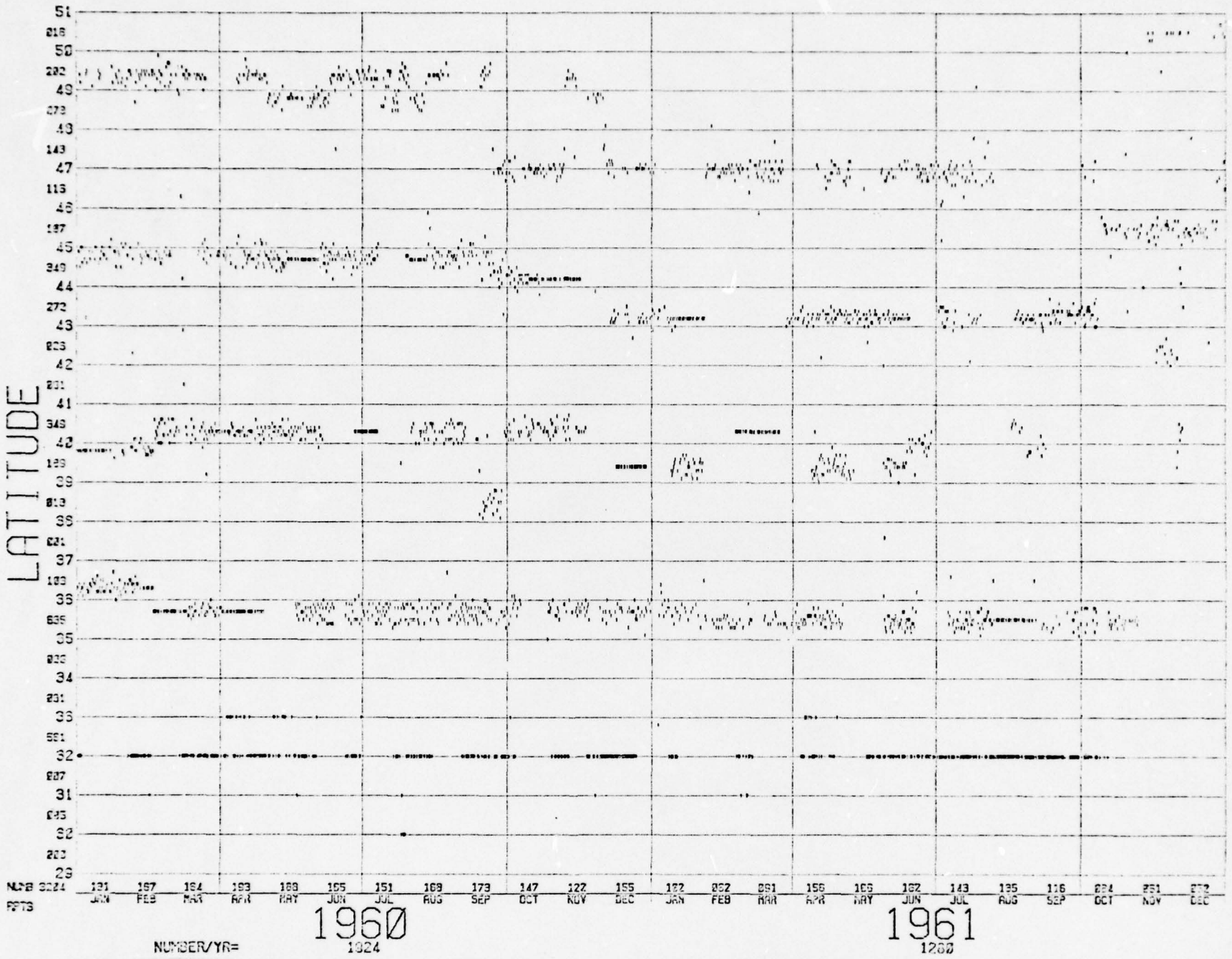


Figure 4. Chronological Distribution of Radiosonde Profiles with Latitude: 1960-1961.

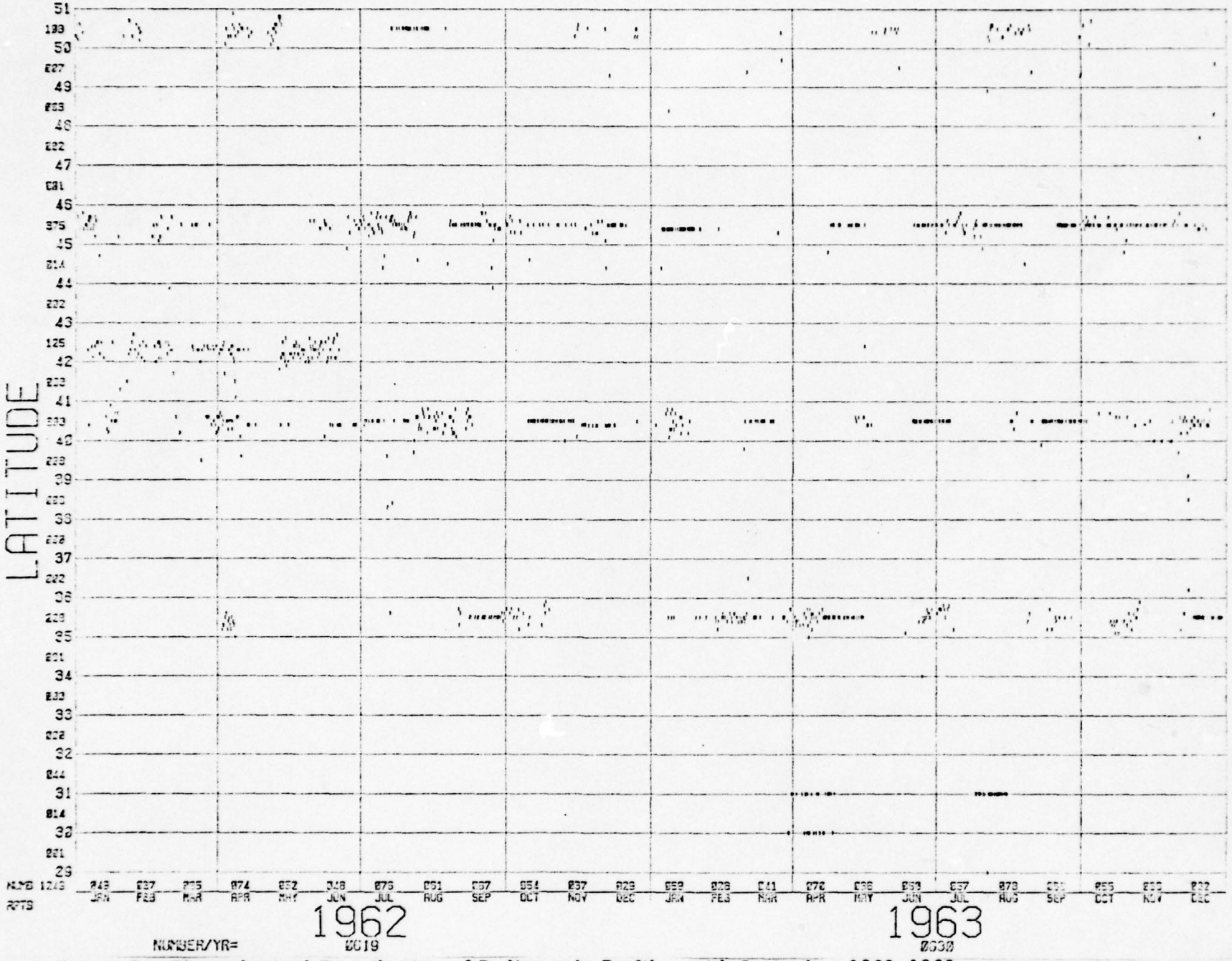


Figure 5. Chronological Distribution of Radiosonde Profiles with Latitude: 1962-1963.

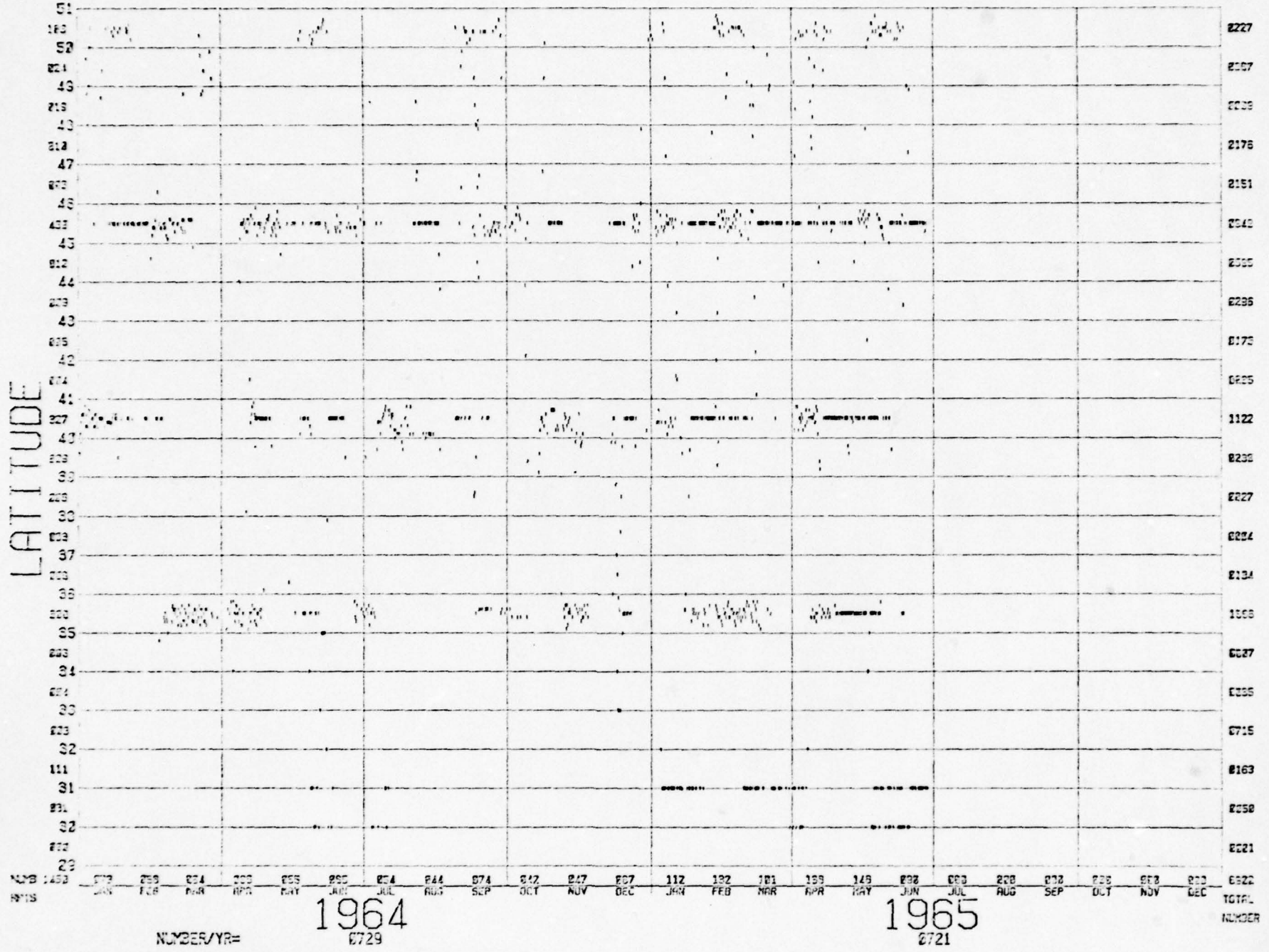


Figure 6. Chronological Distribution of Radiosonde Profiles with Latitude: 1964-1965.

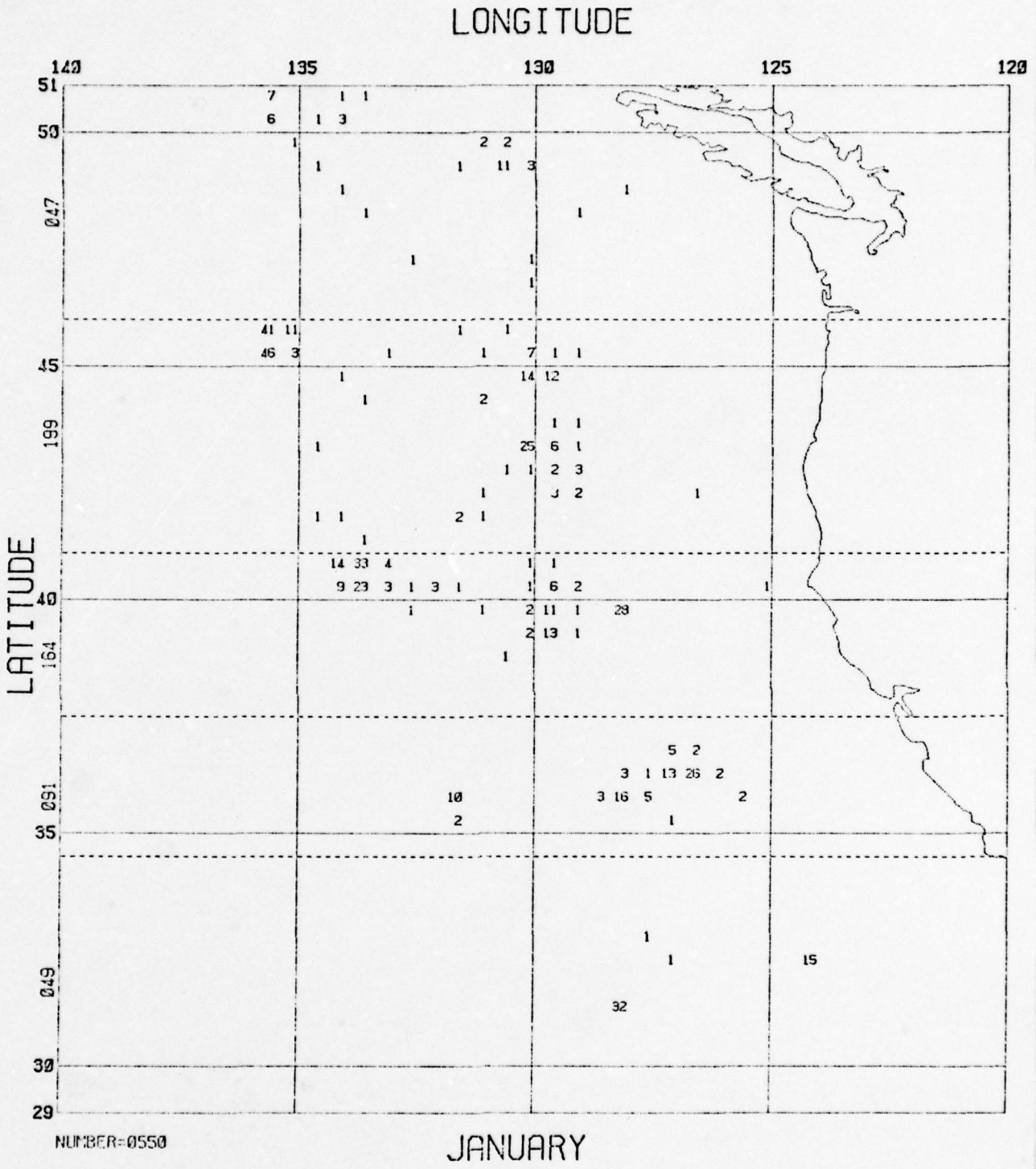


Figure 7. Geographical Distribution of Radiosonde Reports: January 1957-1965.

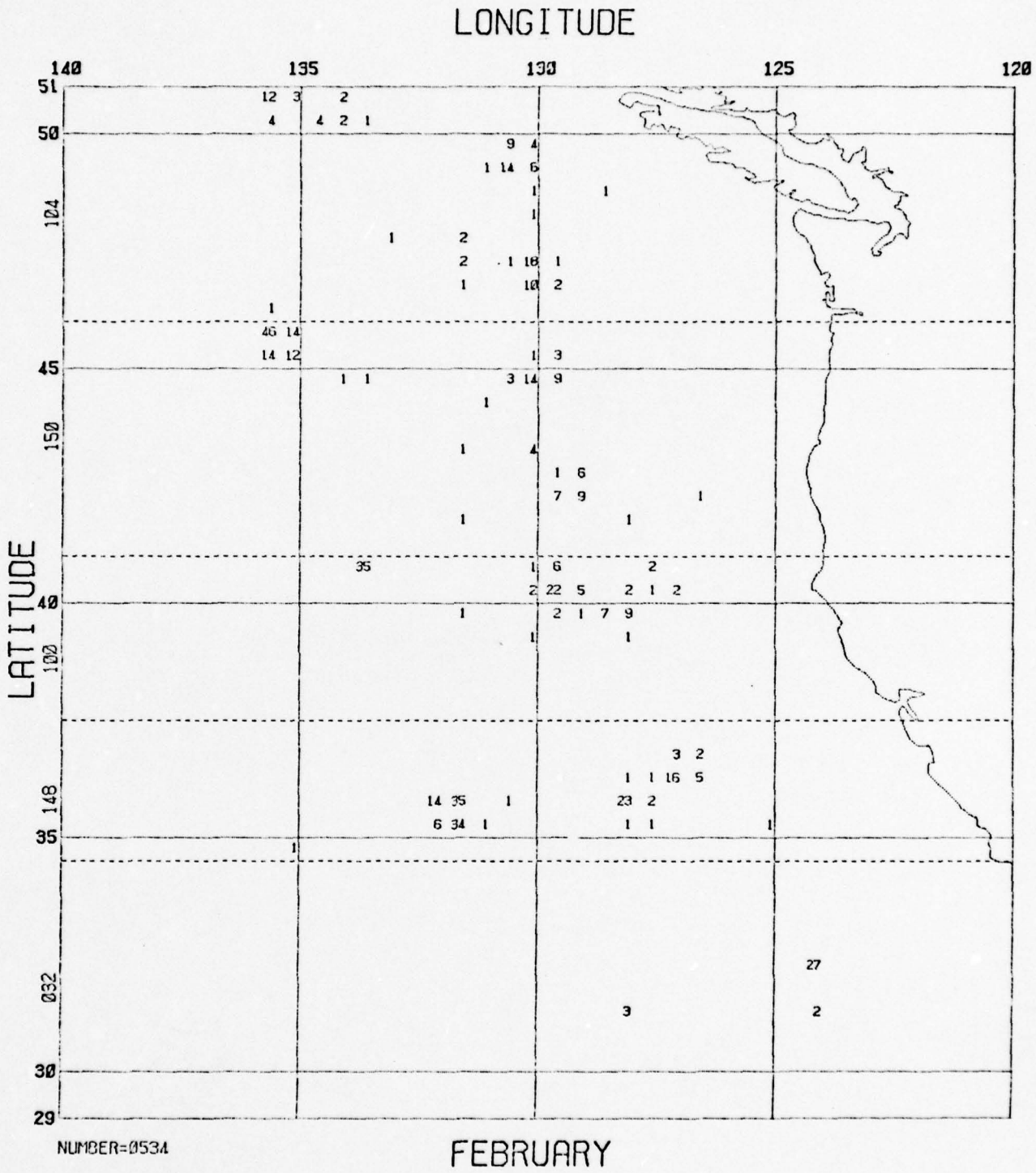


Figure 8. Geographical Distribution of Radiosonde Reports: February 1957-1965.

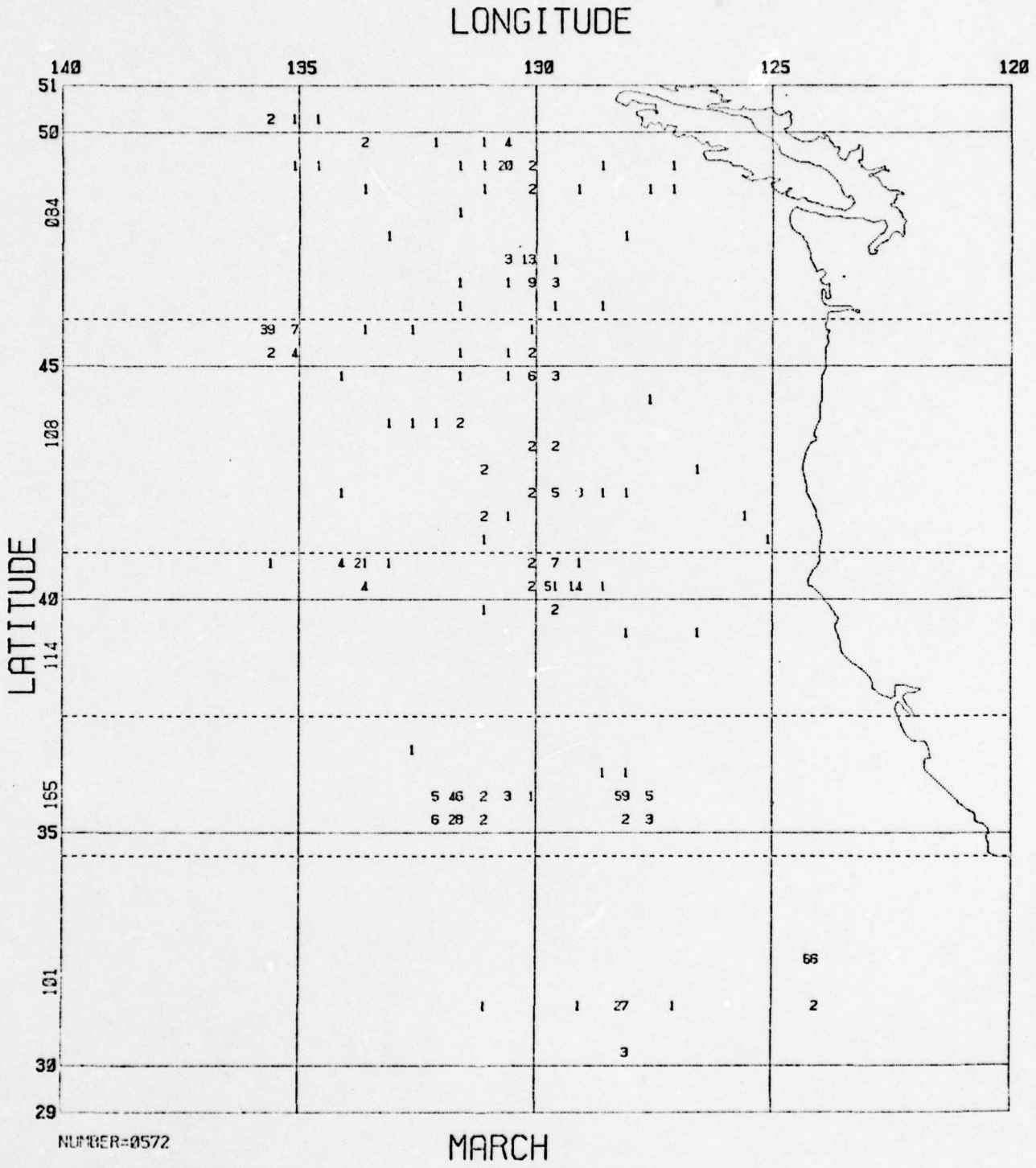


Figure 9. Geographical Distribution of Radiosonde Reports: March 1957-1965.

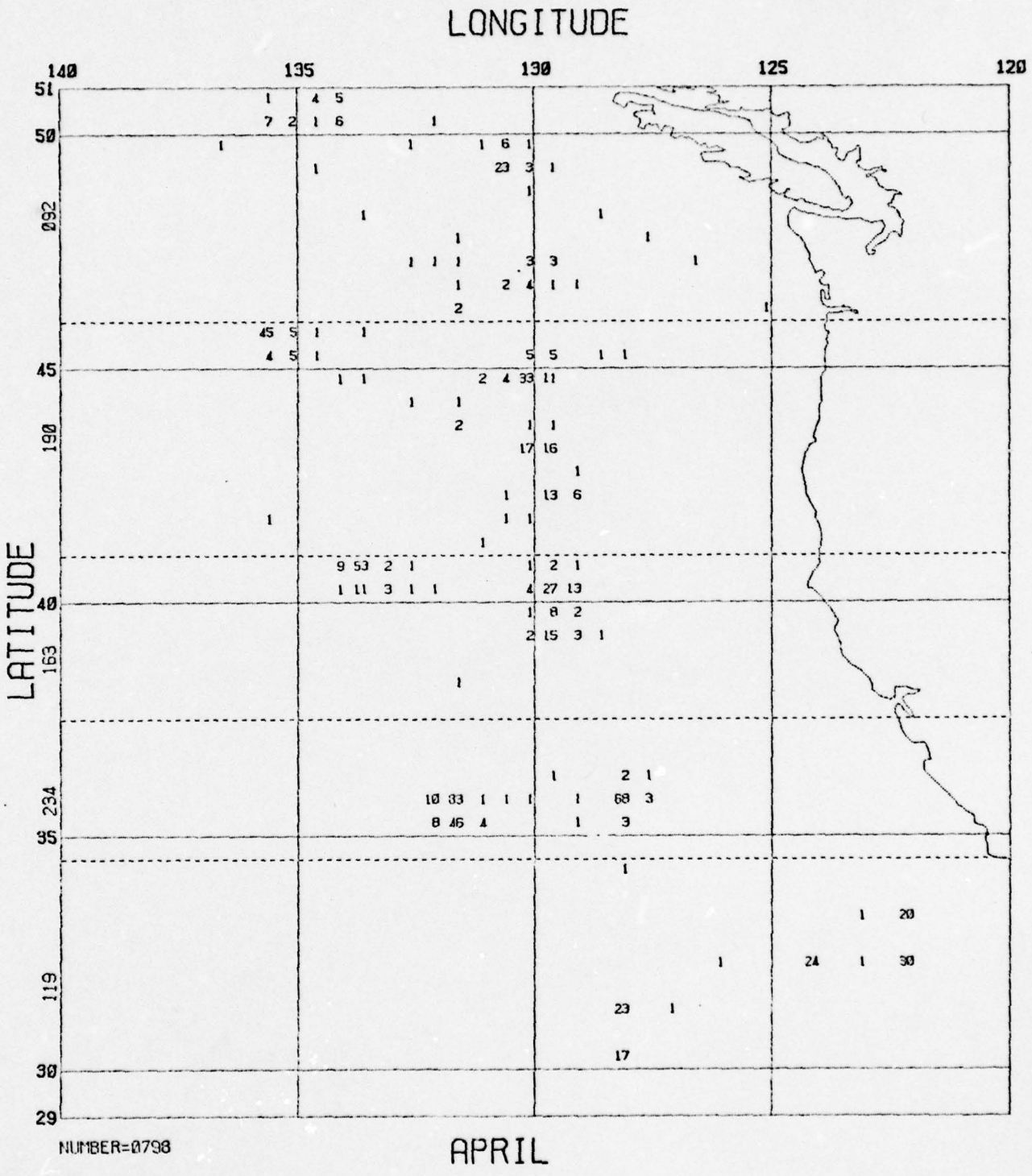


Figure 10. Geographical Distribution of Radiosonde Reports: April 1957-1965.

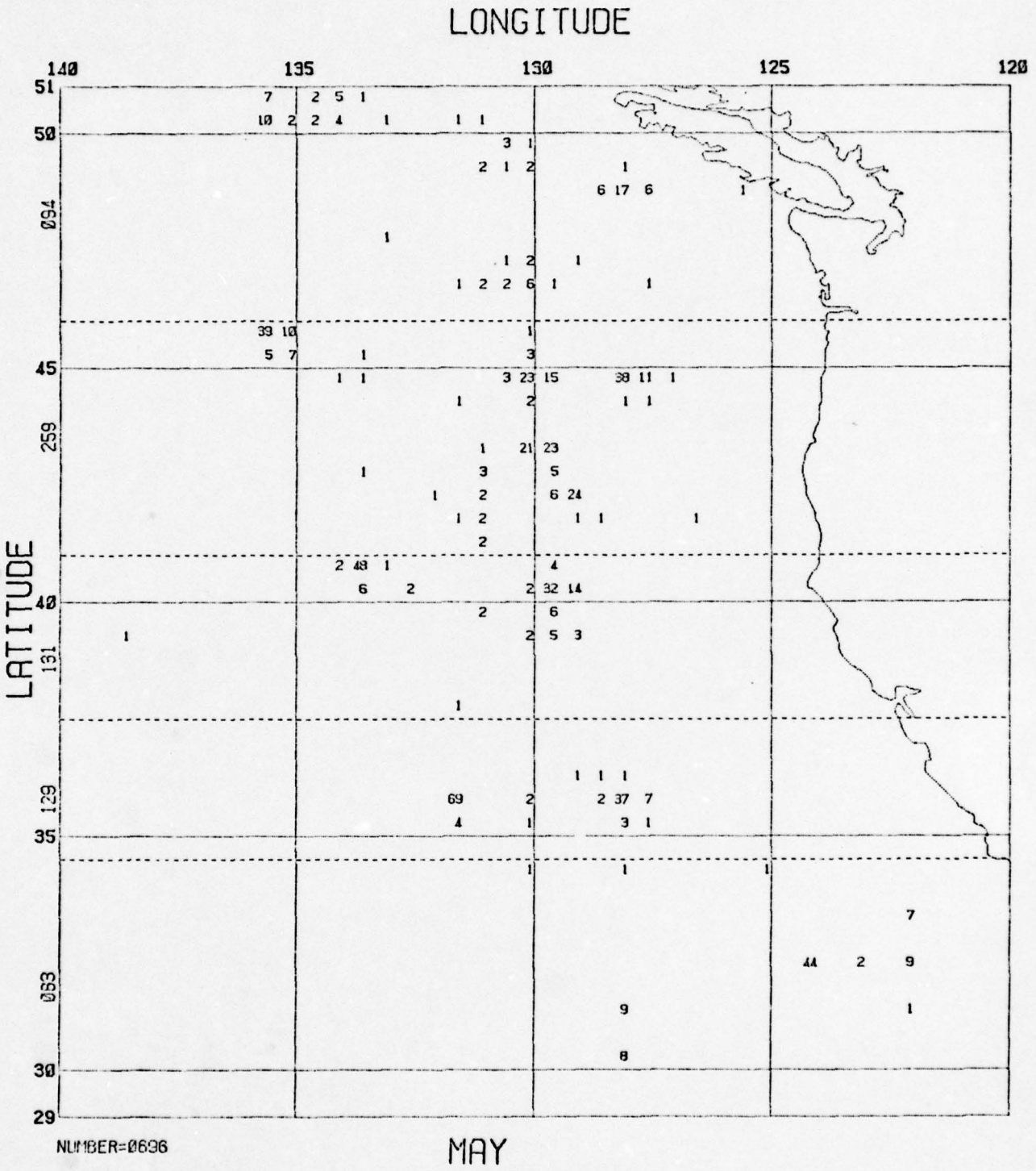


Figure 11. Geographical Distribution of Radiosonde Reports: May 1957-1965.

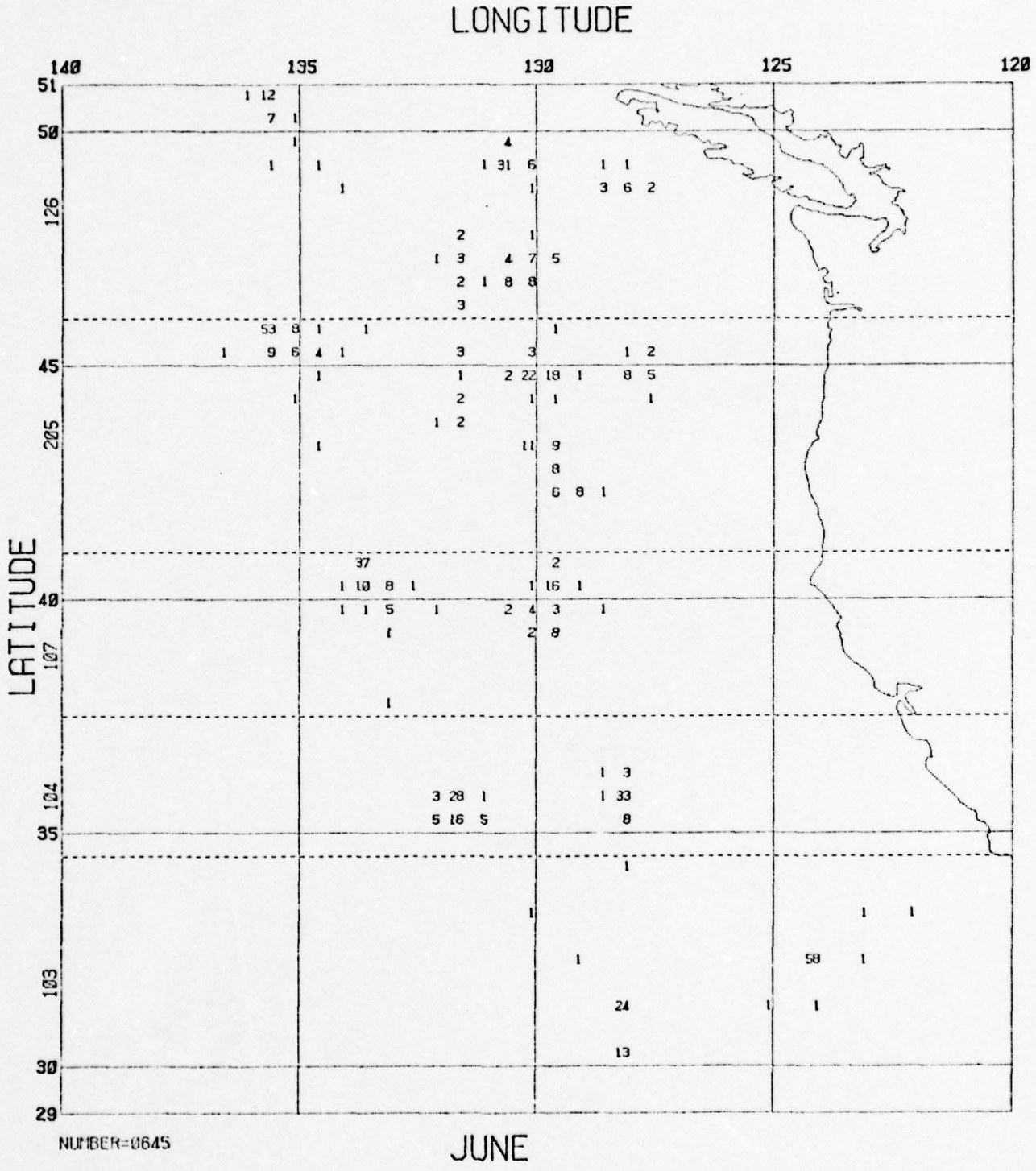


Figure 12. Geographical Distribution of Radiosonde Reports: June 1957-1965.

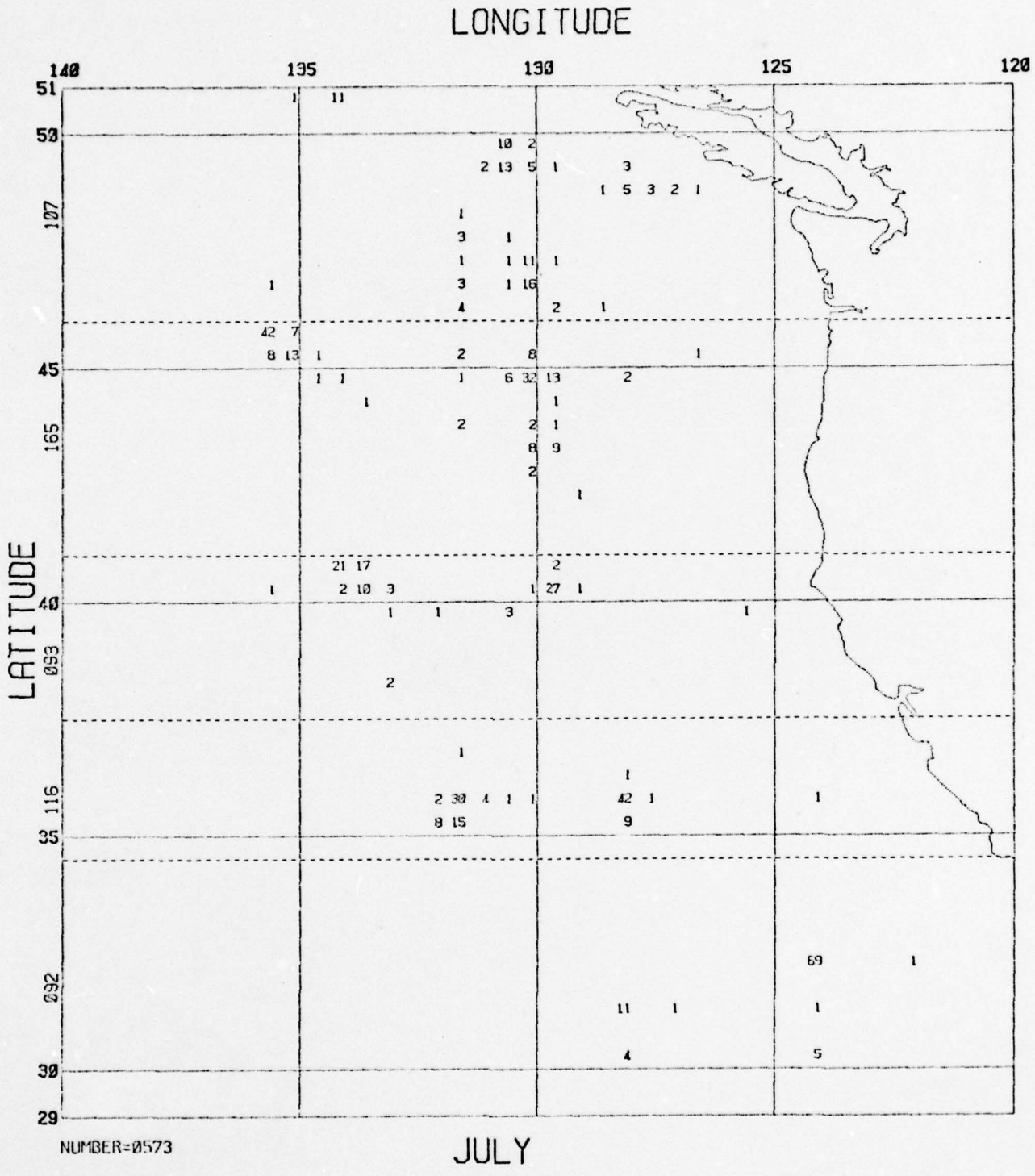


Figure 13. Geographical Distribution of Radiosonde Reports: July 1957-1964.

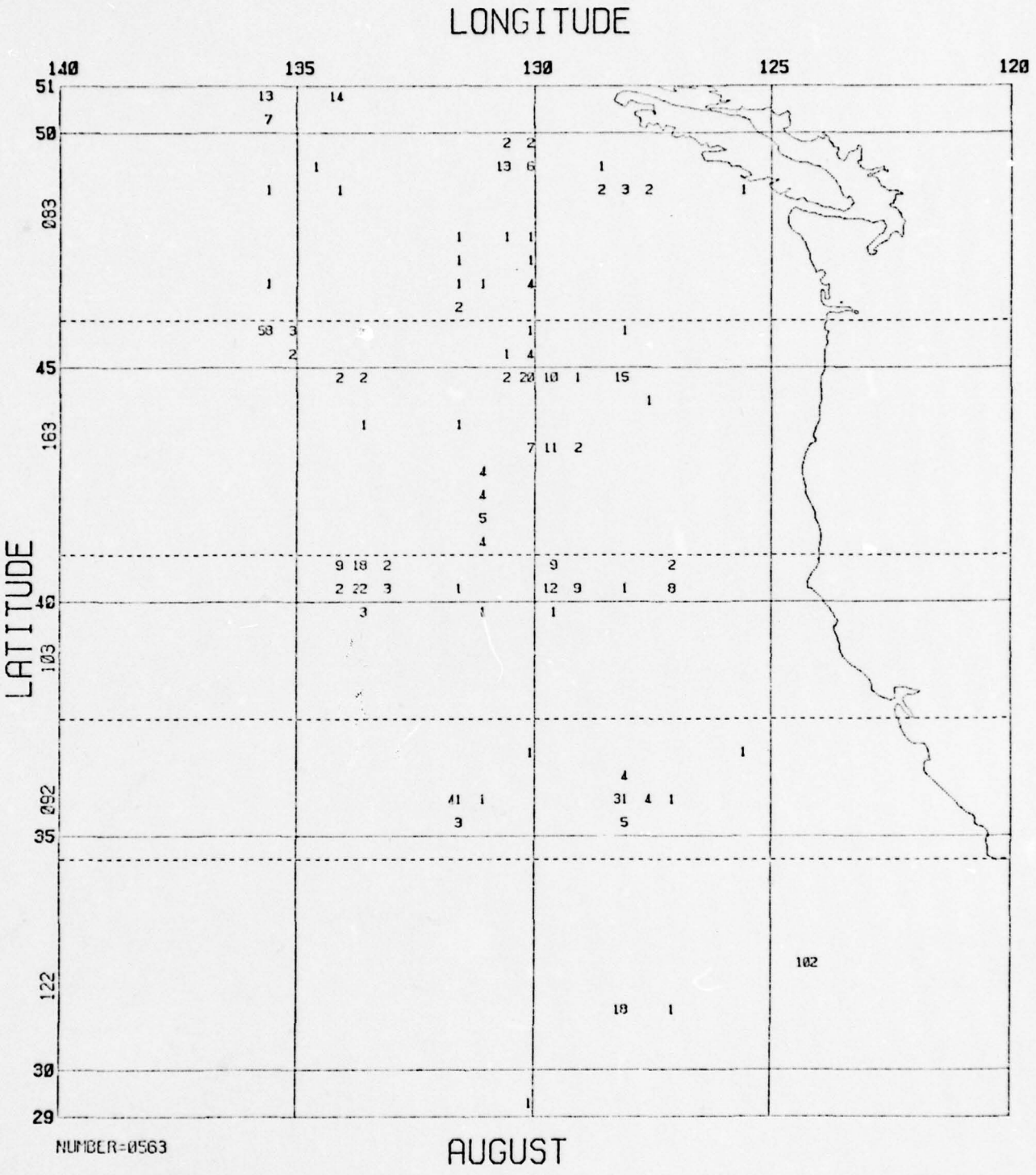


Figure 14. Geographical Distribution of Radiosonde Reports: August 1957-1964.

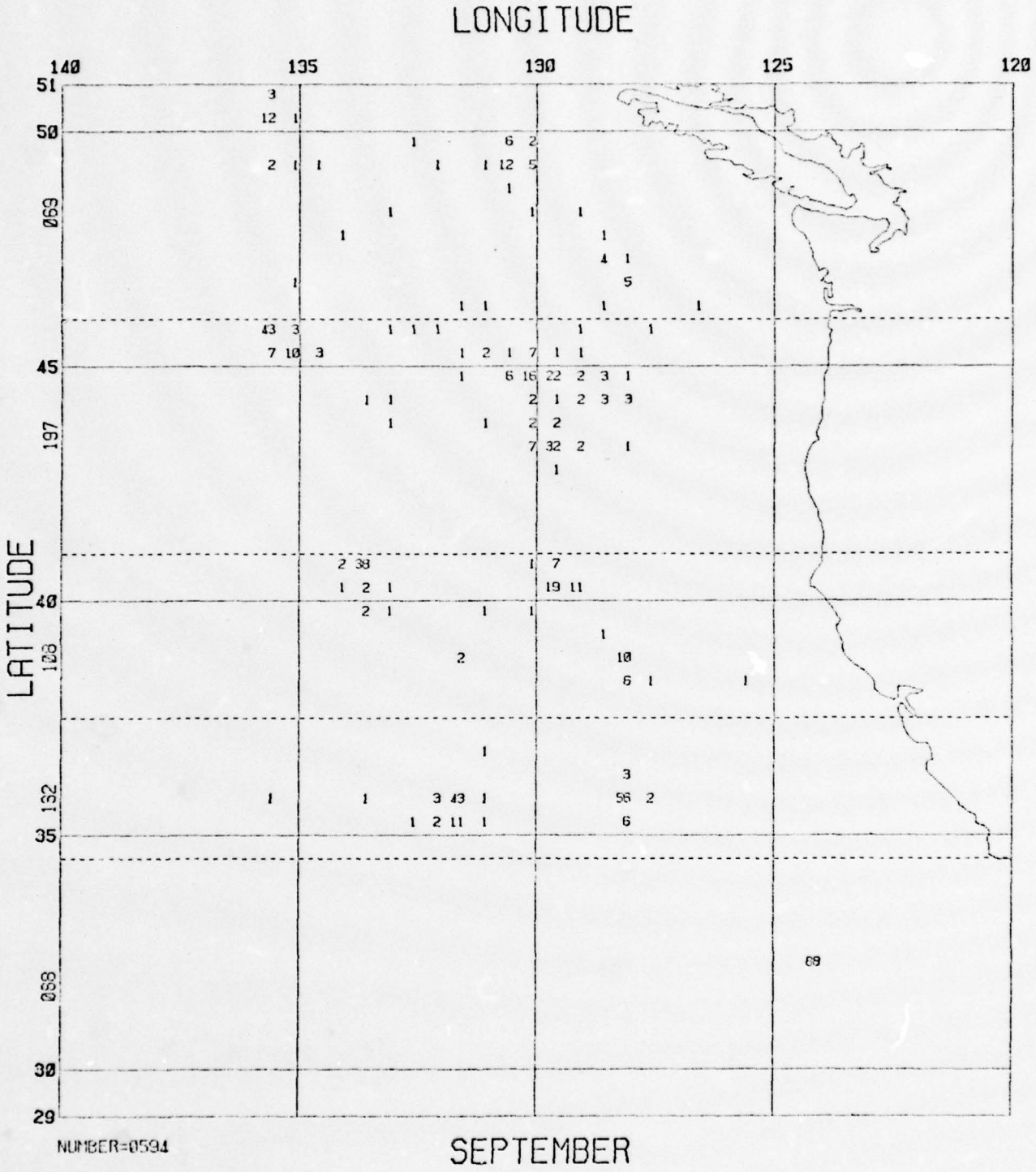


Figure 15. Geographical Distribution of Radiosonde Reports: September 1957-1964.

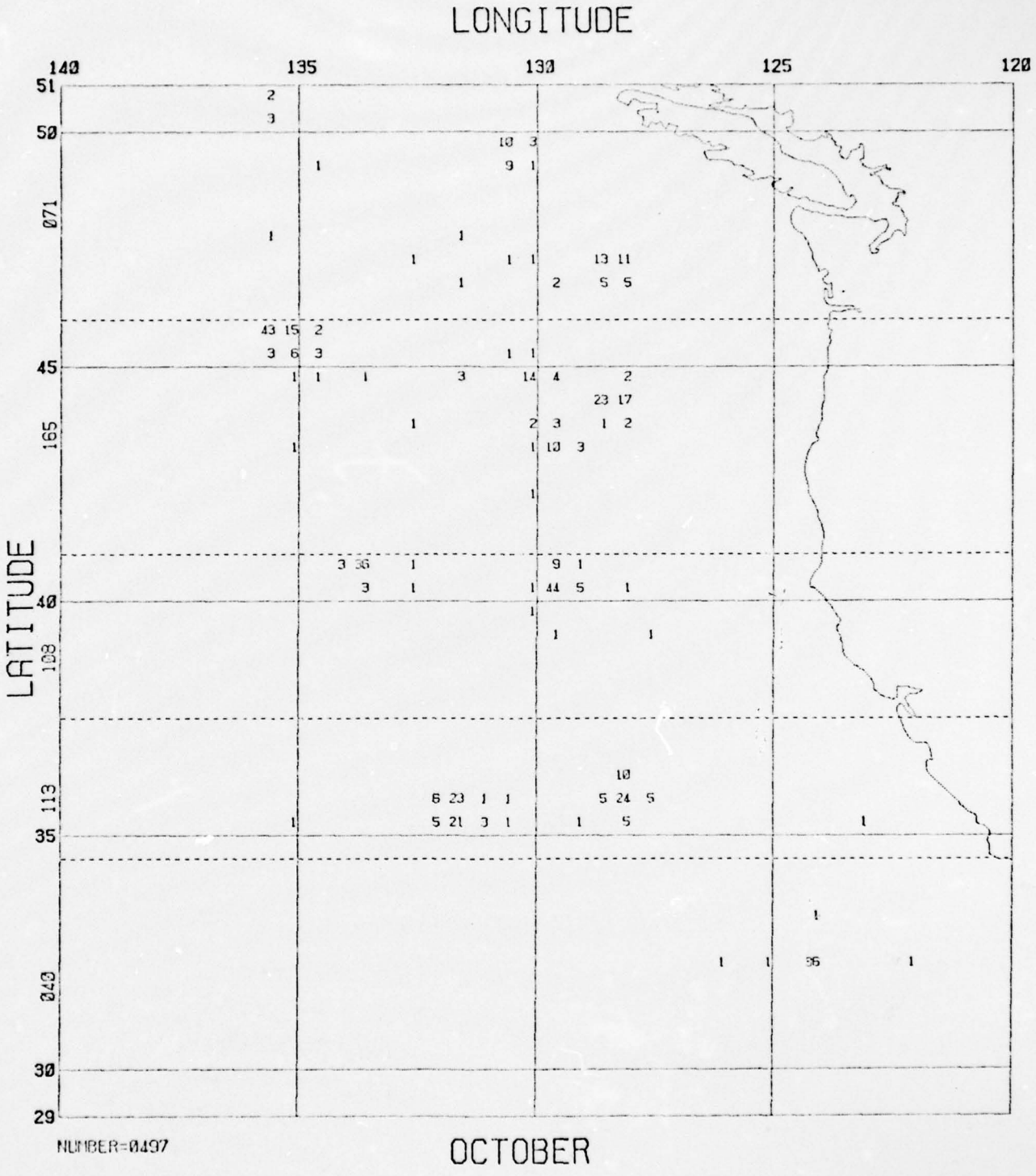


Figure 16. Geographical Distribution of Radiosonde Reports: October 1956-1964.

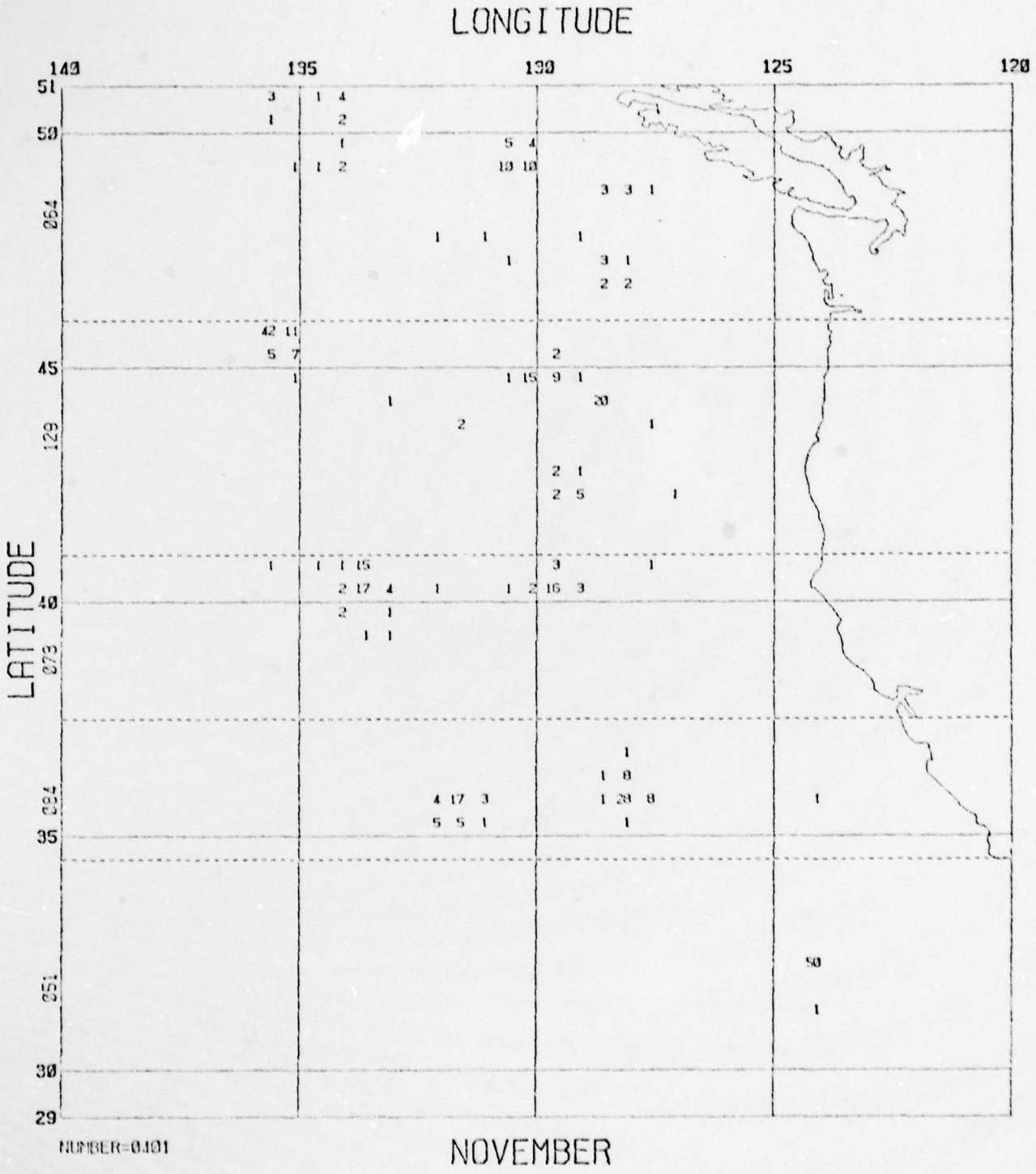


Figure 17. Geographical Distribution of Radiosonde Reports: November 1956-1964.

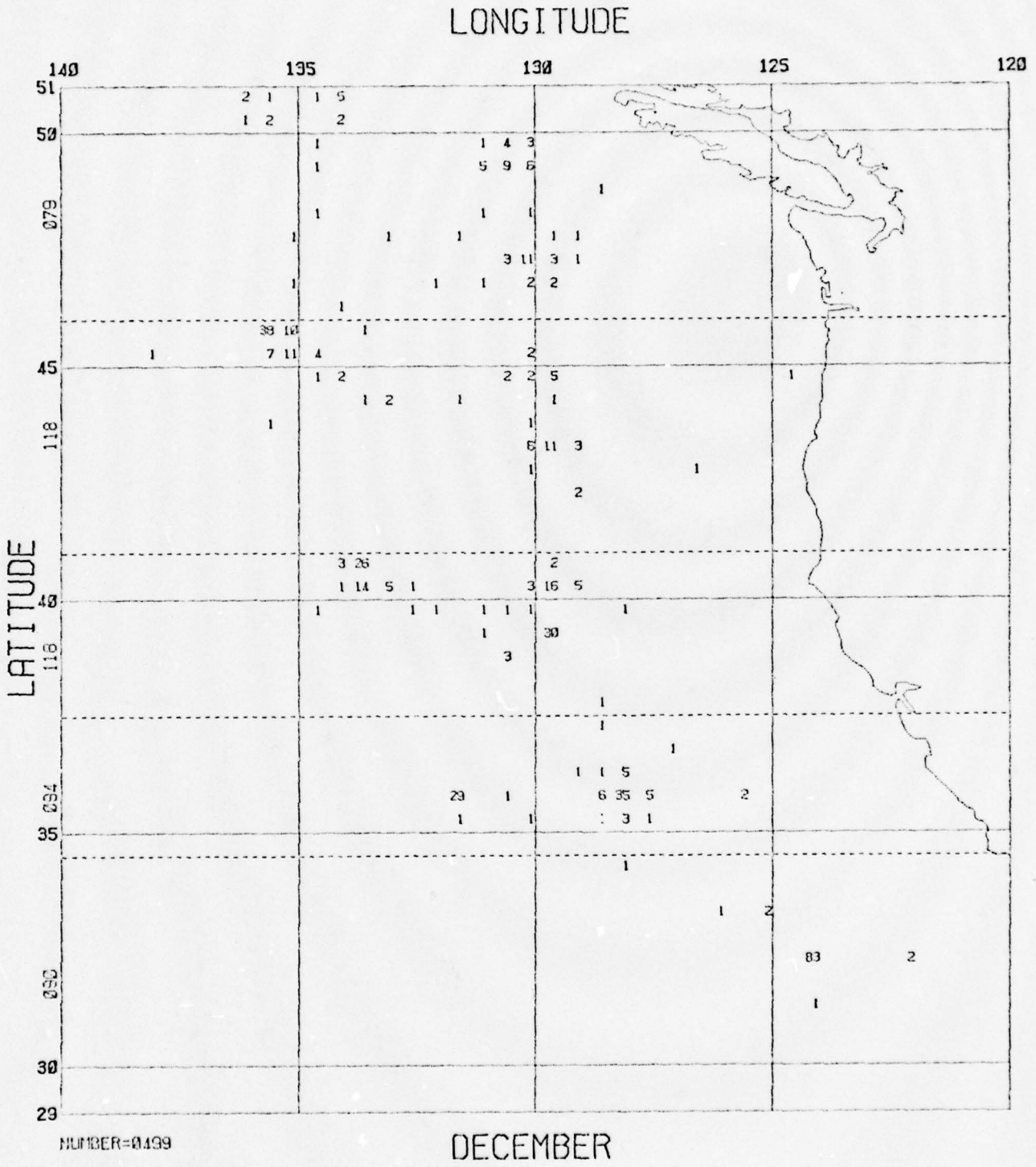


Figure 18. Geographical Distribution of Radiosonde Reports: December 1956-1964.

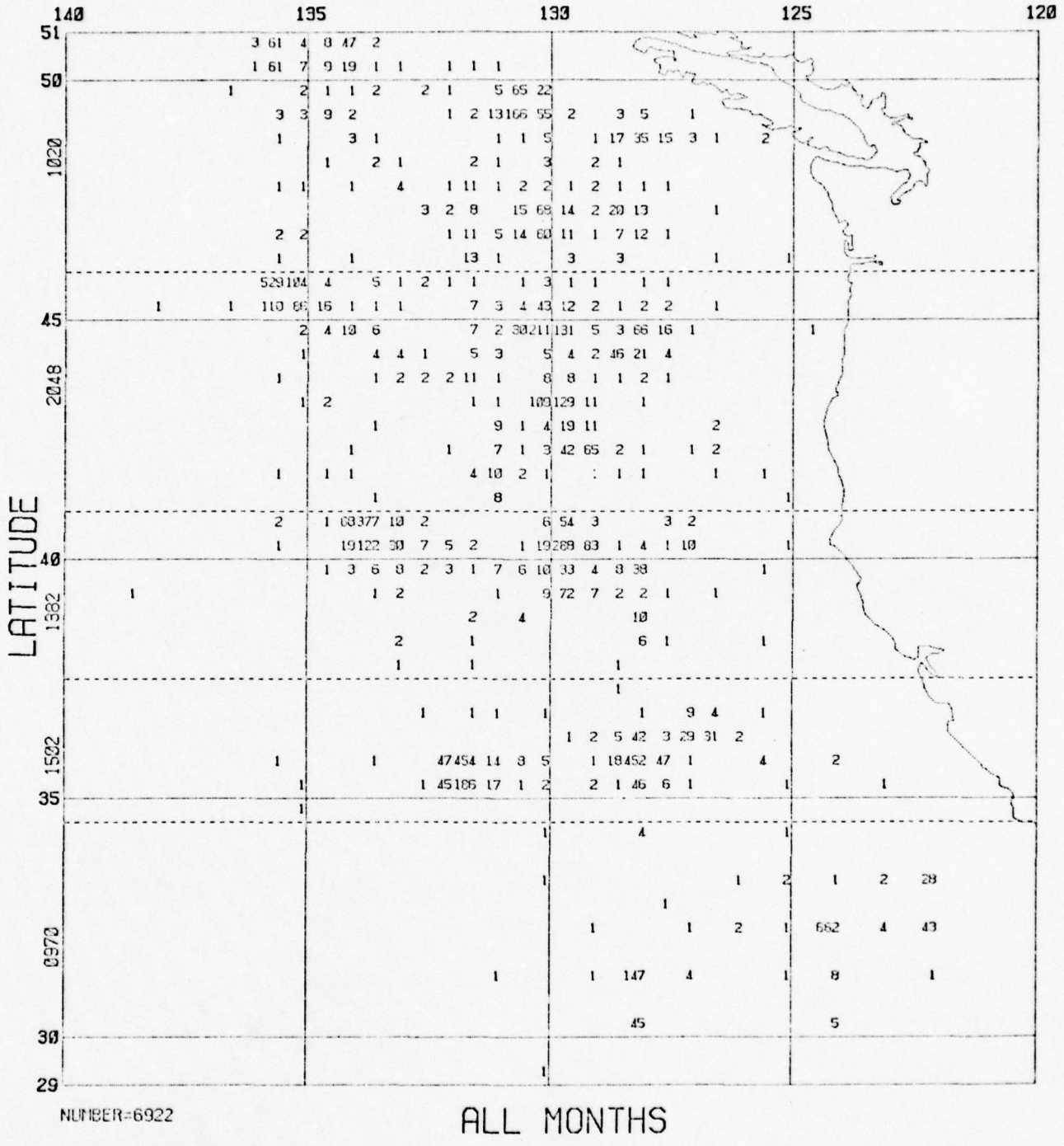


Figure 19. Geographical Distribution of Radiosonde Reports: All Months October 1956-June 1965

Figure 20. Monthly Mean Values of Trap Base Height for Non-Surface Ducts

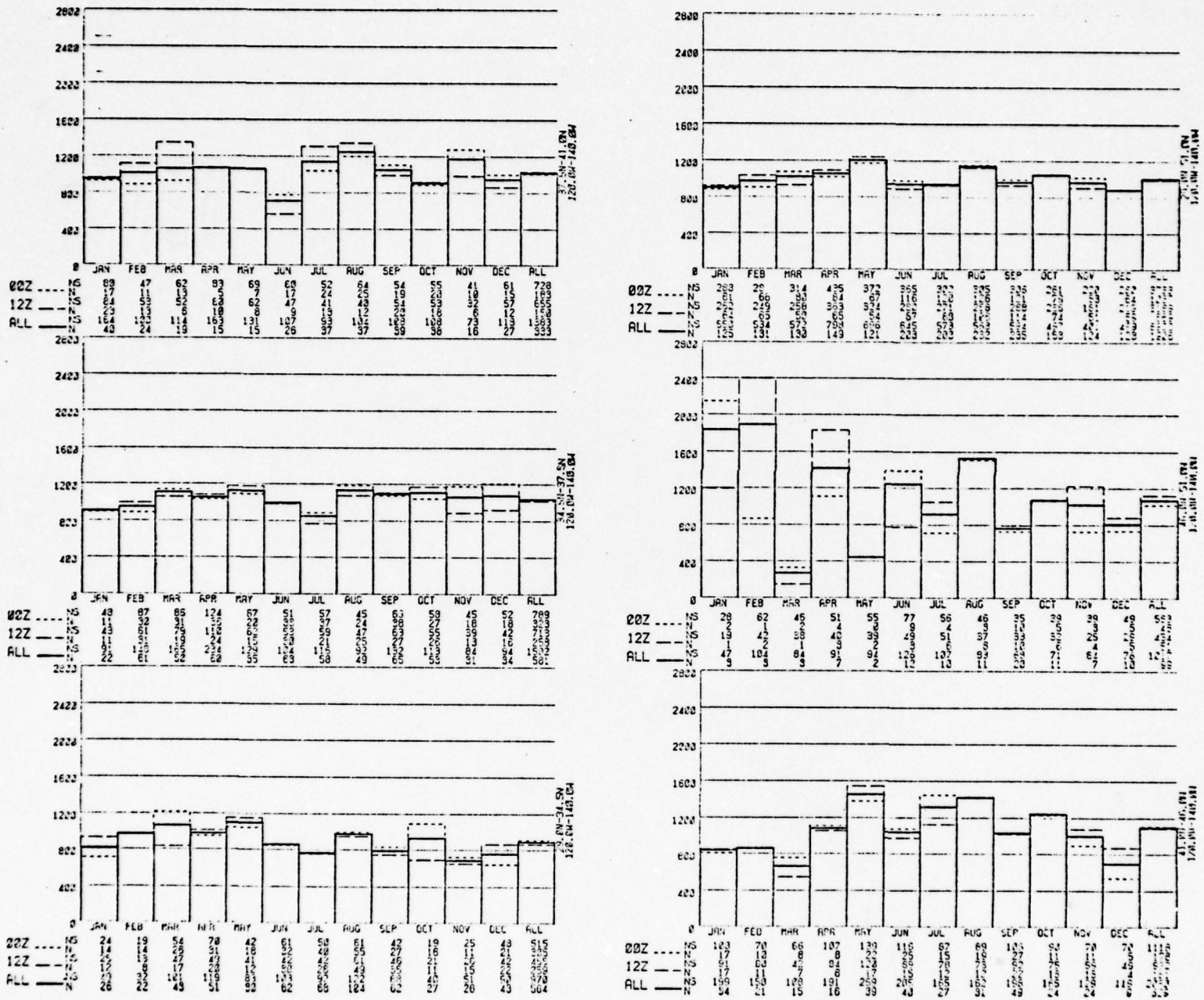


Figure 21. Monthly Mean Values of Trap Thickness for Non-Surface Ducts

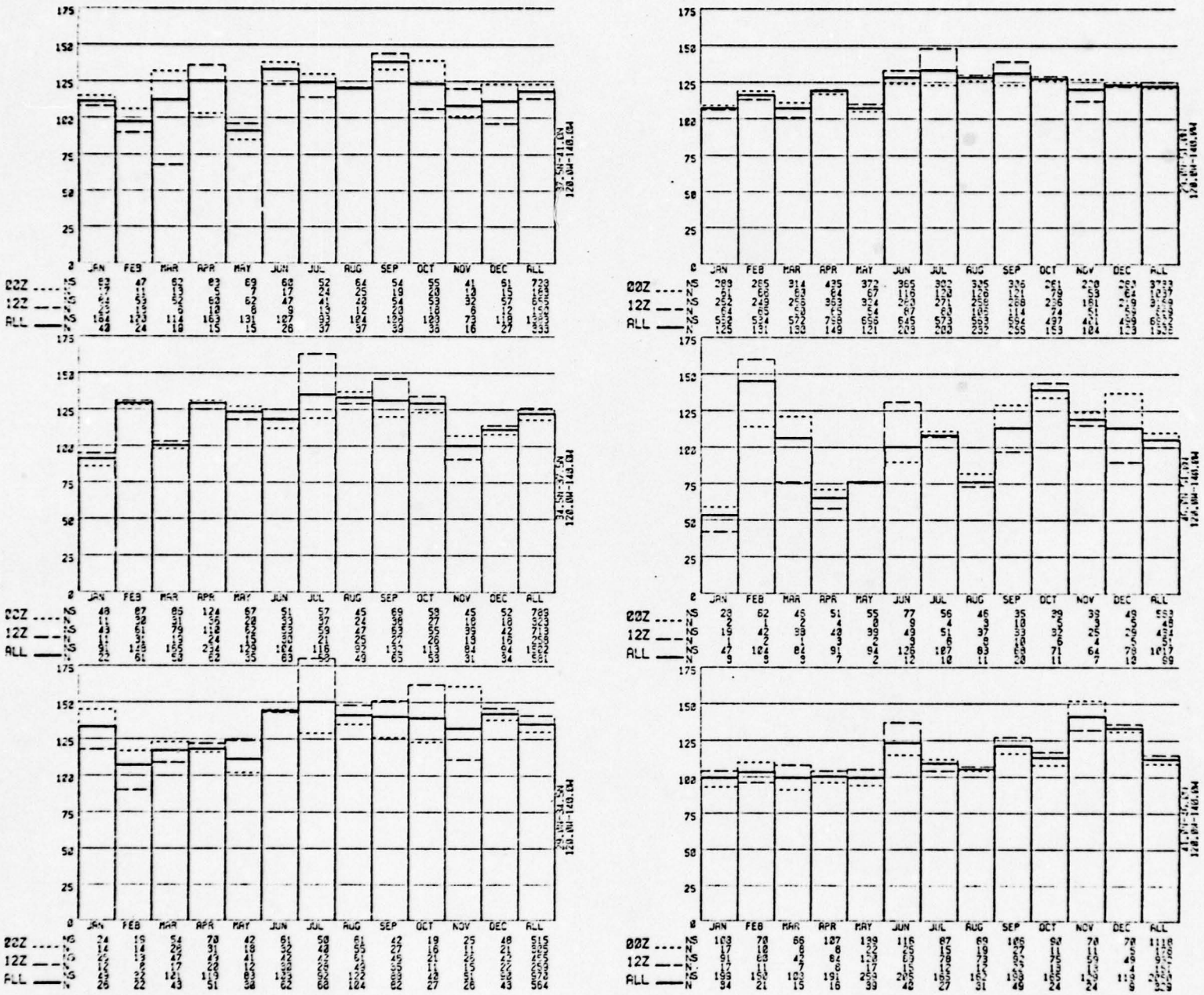


Figure 22. Monthly Mean Values of Trap Gradient for Non-Surface Ducts (sign of gradient reversed)

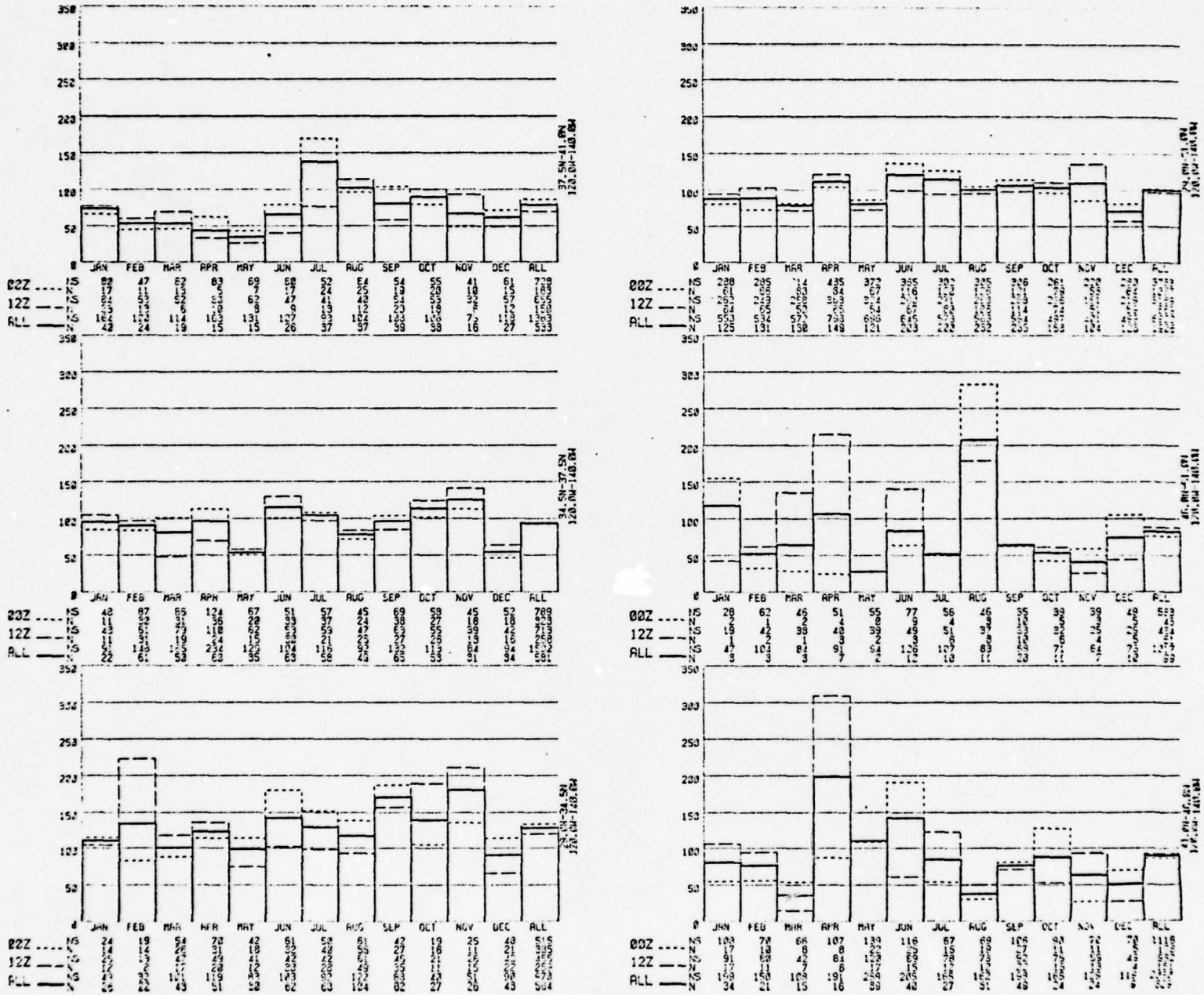


Figure 23. Monthly Mean Values of Duct Thickness for Non-Surface Ducts

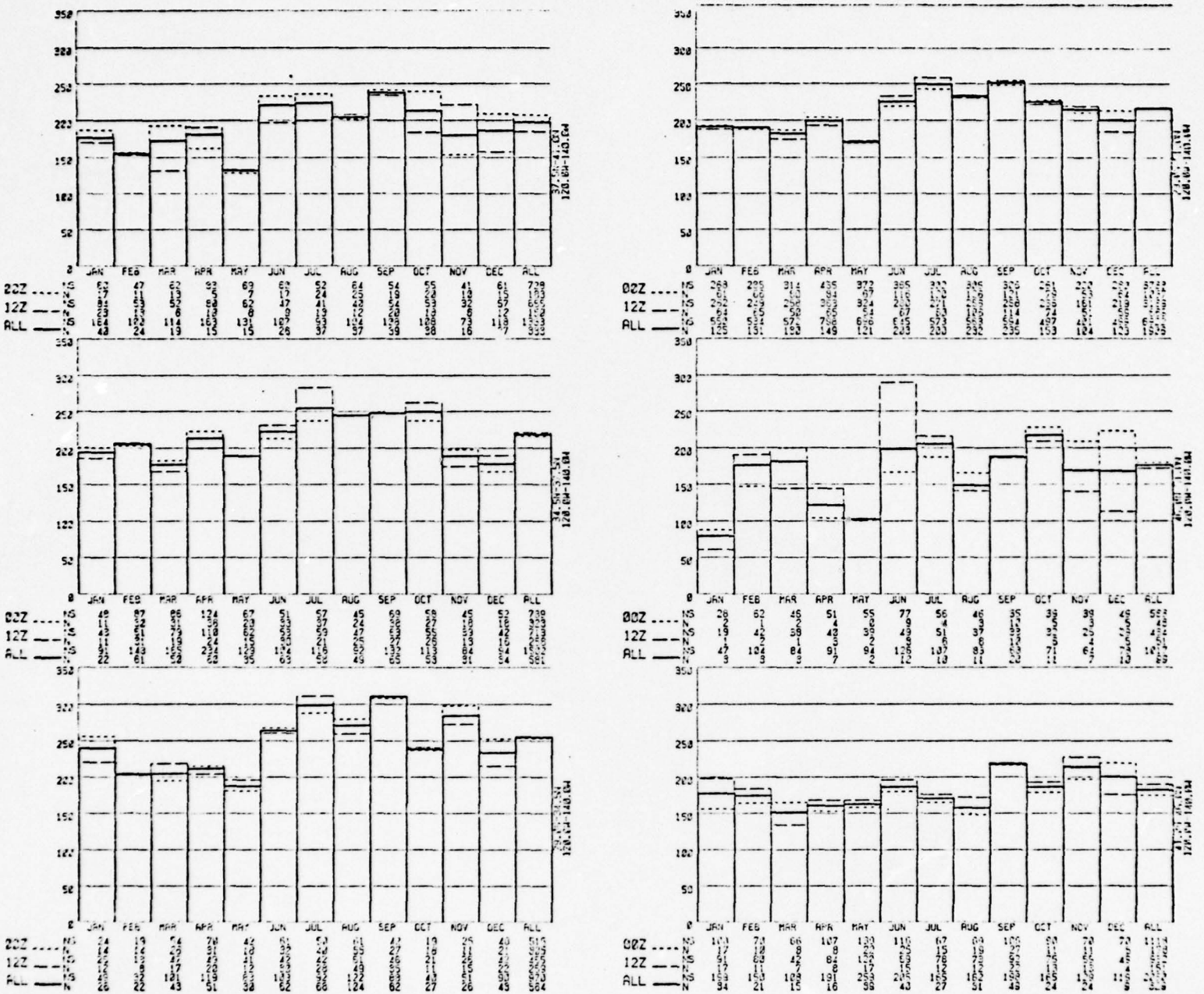


Figure 24. Monthly Mean Values of Duct Base for Non-Surface Ducts

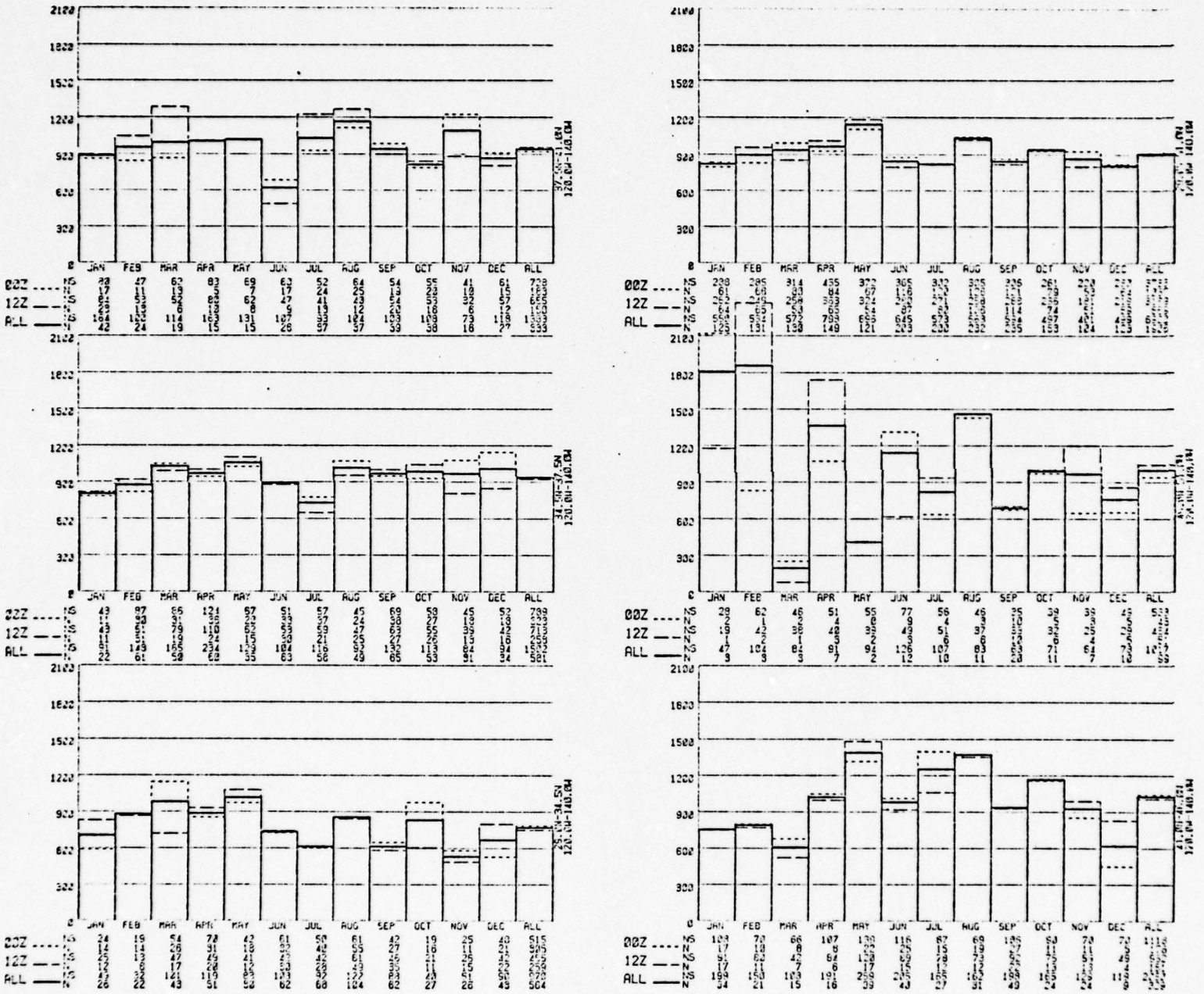


Figure 25. Monthly Mean Values of Trap Base Height for Surface Ducts

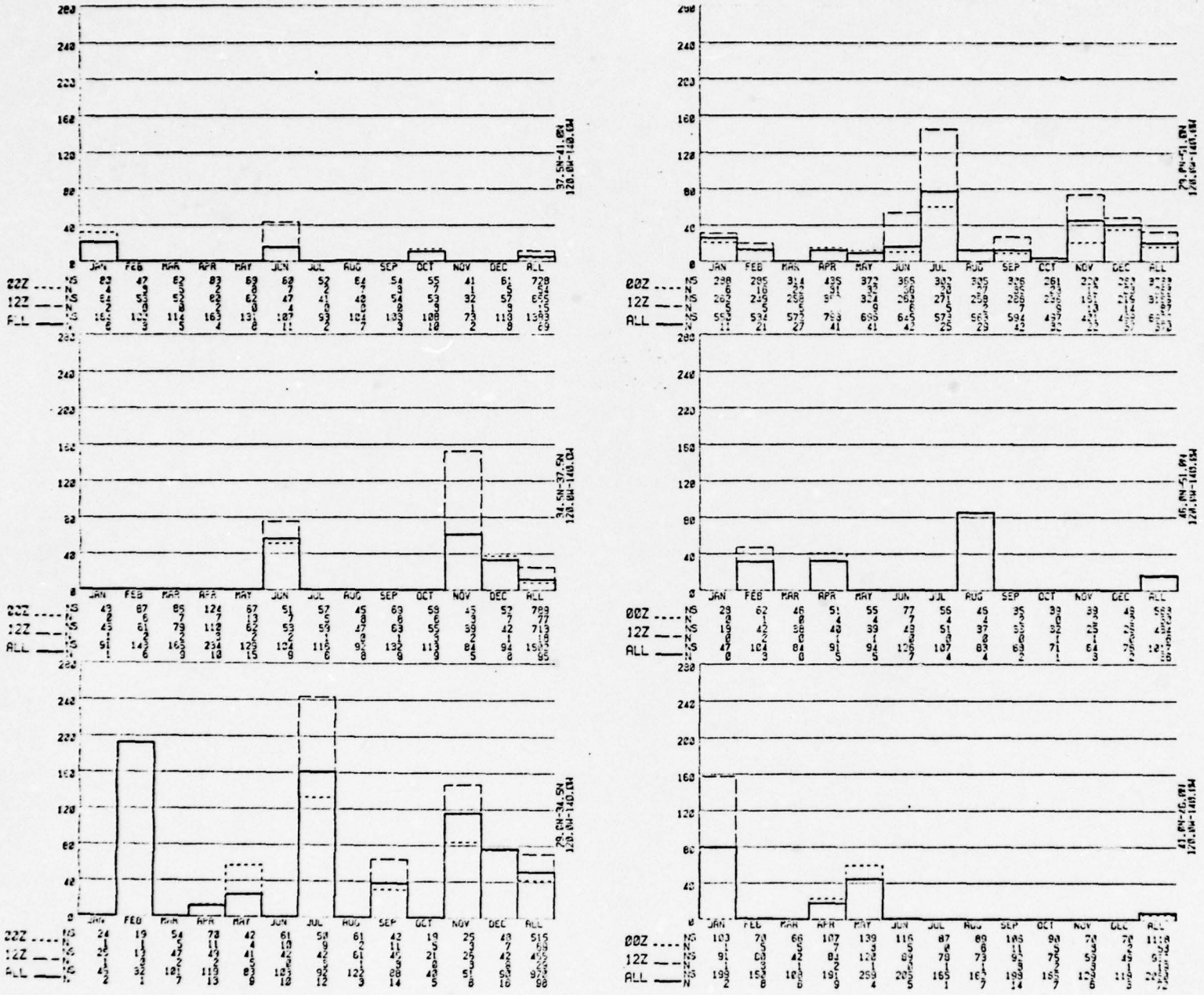


Figure 26. Monthly Mean Values of Trap Thickness for Surface Ducts

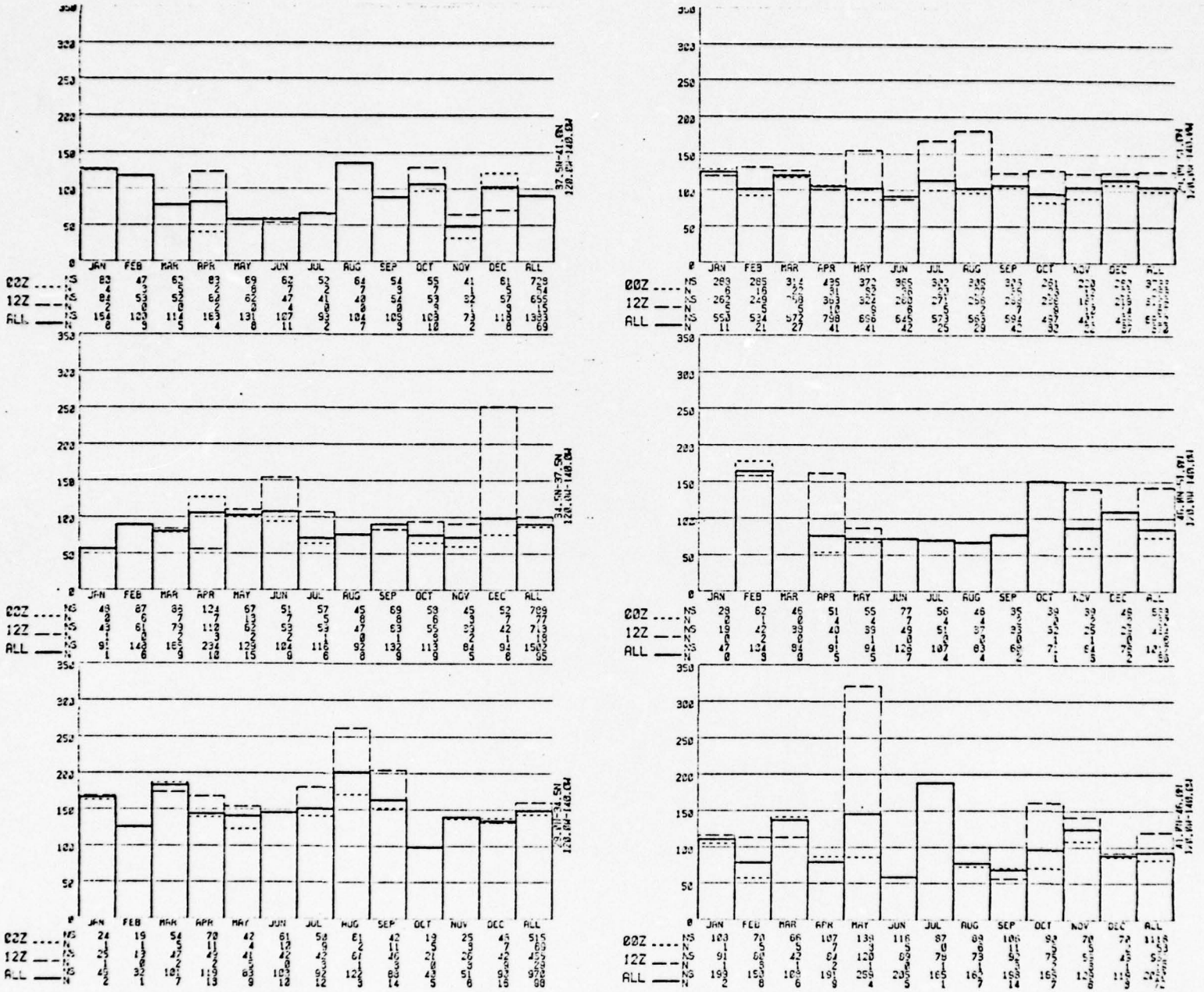


Figure 27. Monthly Mean Values of Trap Gradient for Surface Ducts (sign of gradient reversed)



Figure 28. Monthly Mean Values of Duct Thickness for Surface Ducts

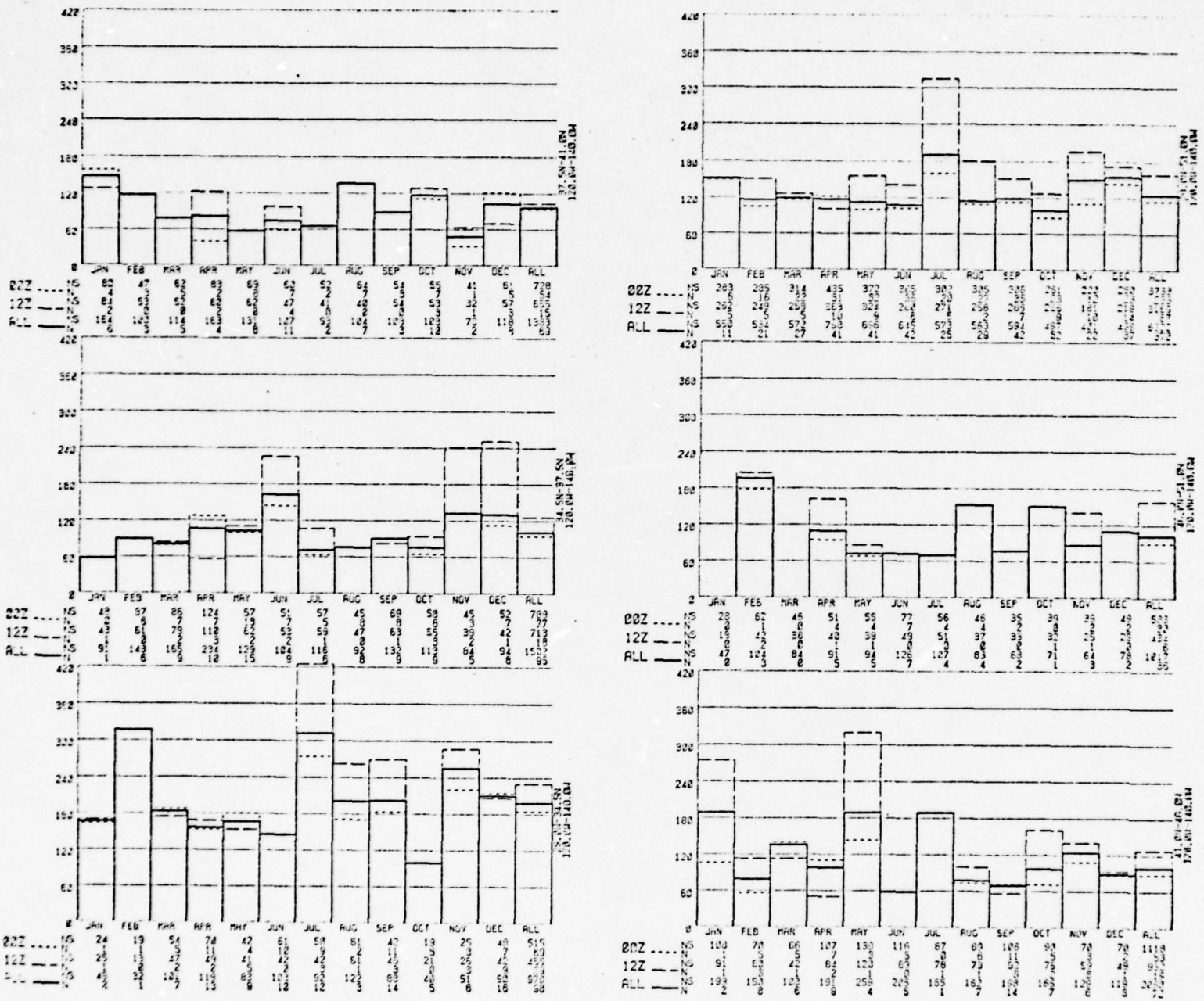


Figure 29. Monthly Mean Values of Base Height for Super-Refractive Layers

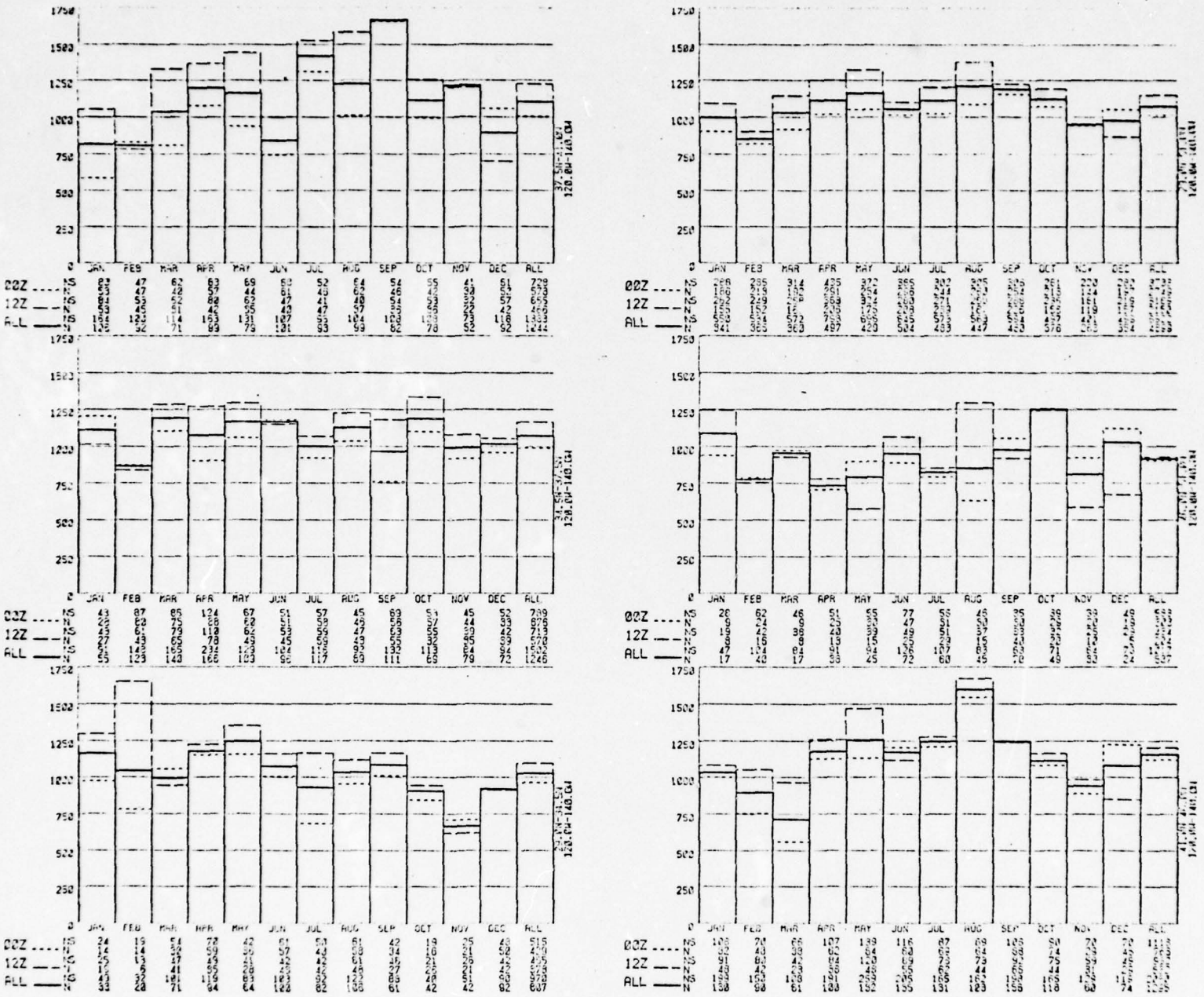


Figure 30. Monthly Mean Values of Thickness for Super-Refractive Layers

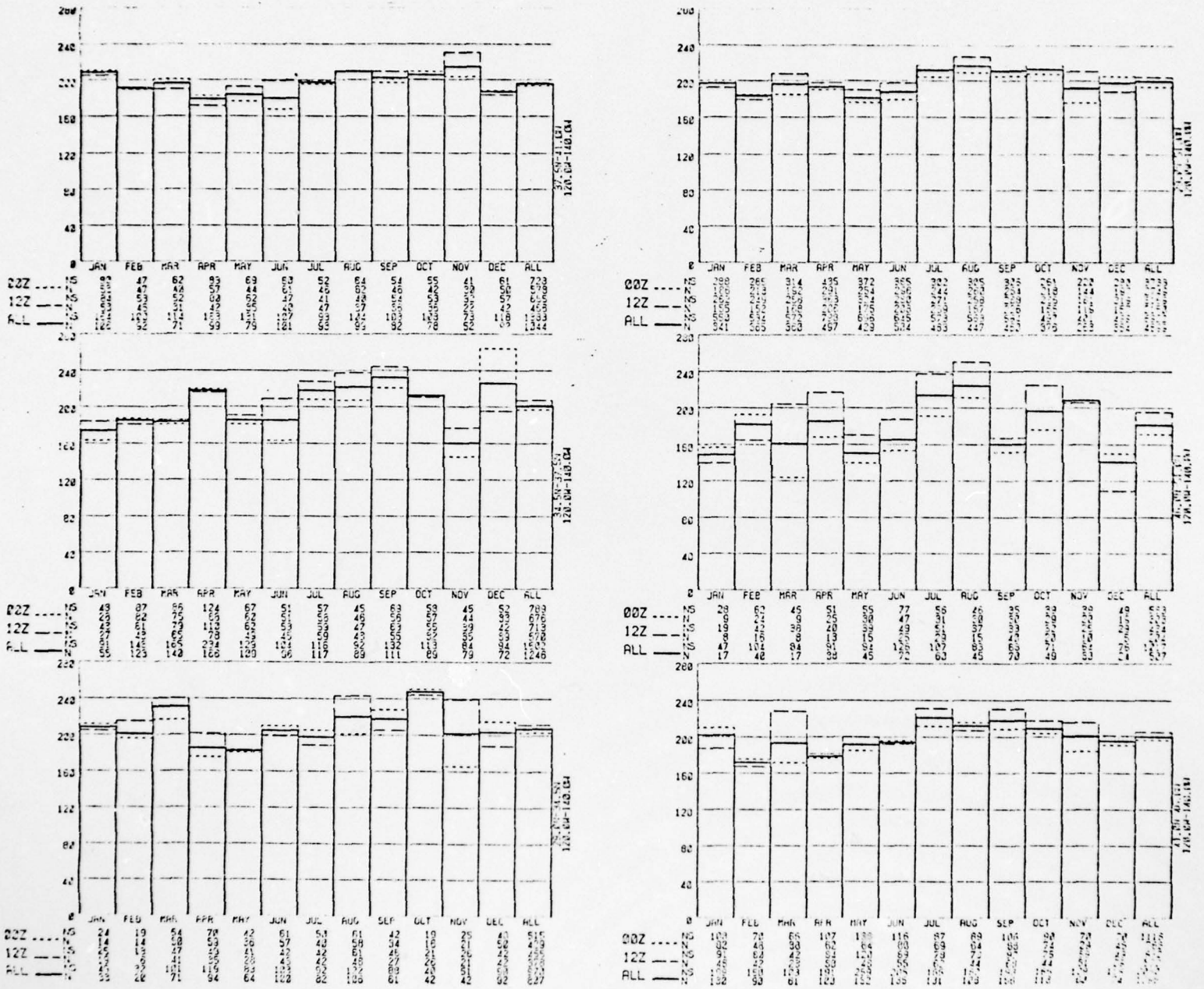


Figure 31. Monthly Mean Values of Gradient for Super-Refractive Layers

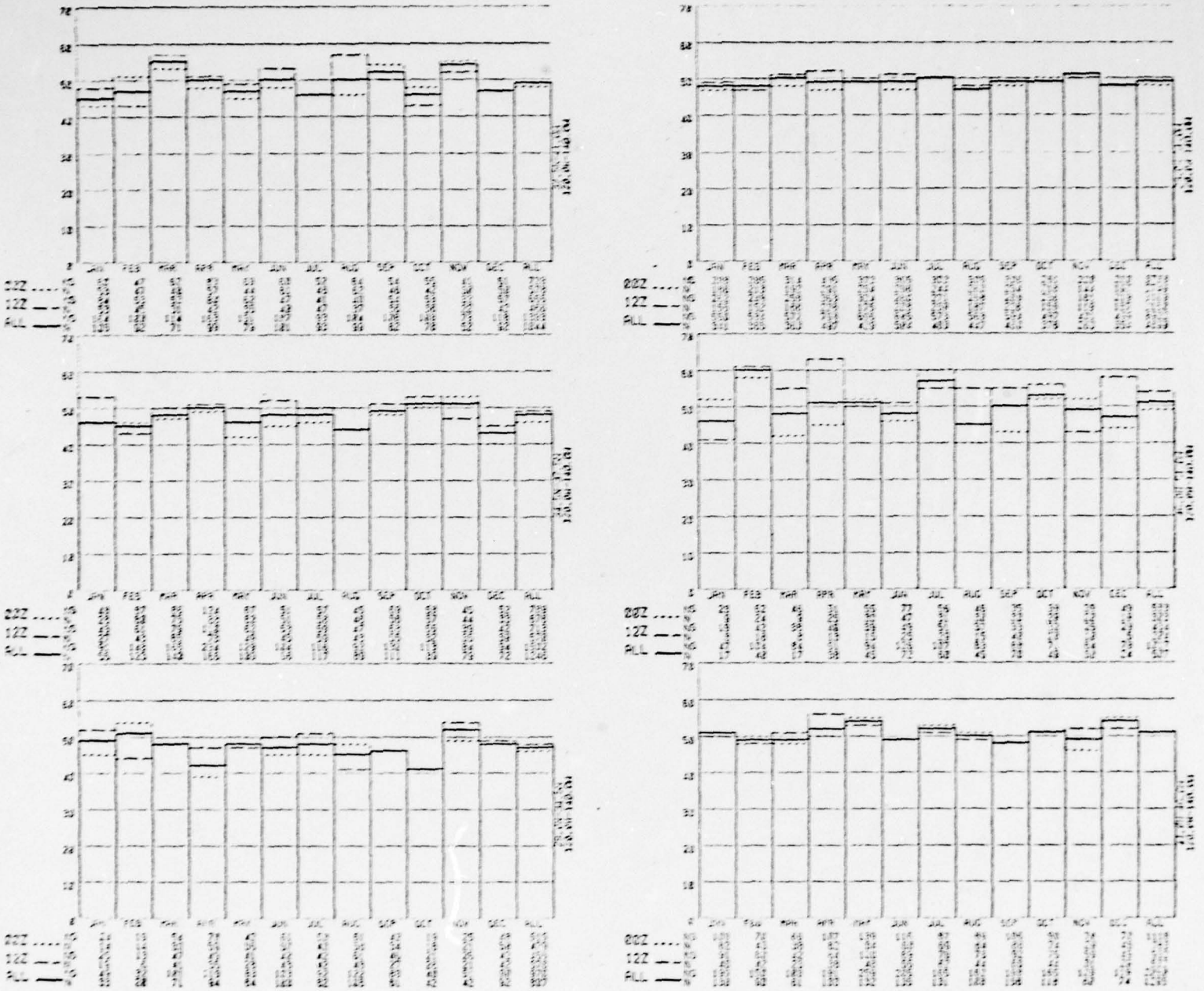


Figure 32. Monthly Mean Values of Base Height for Sub-Refractive Layers

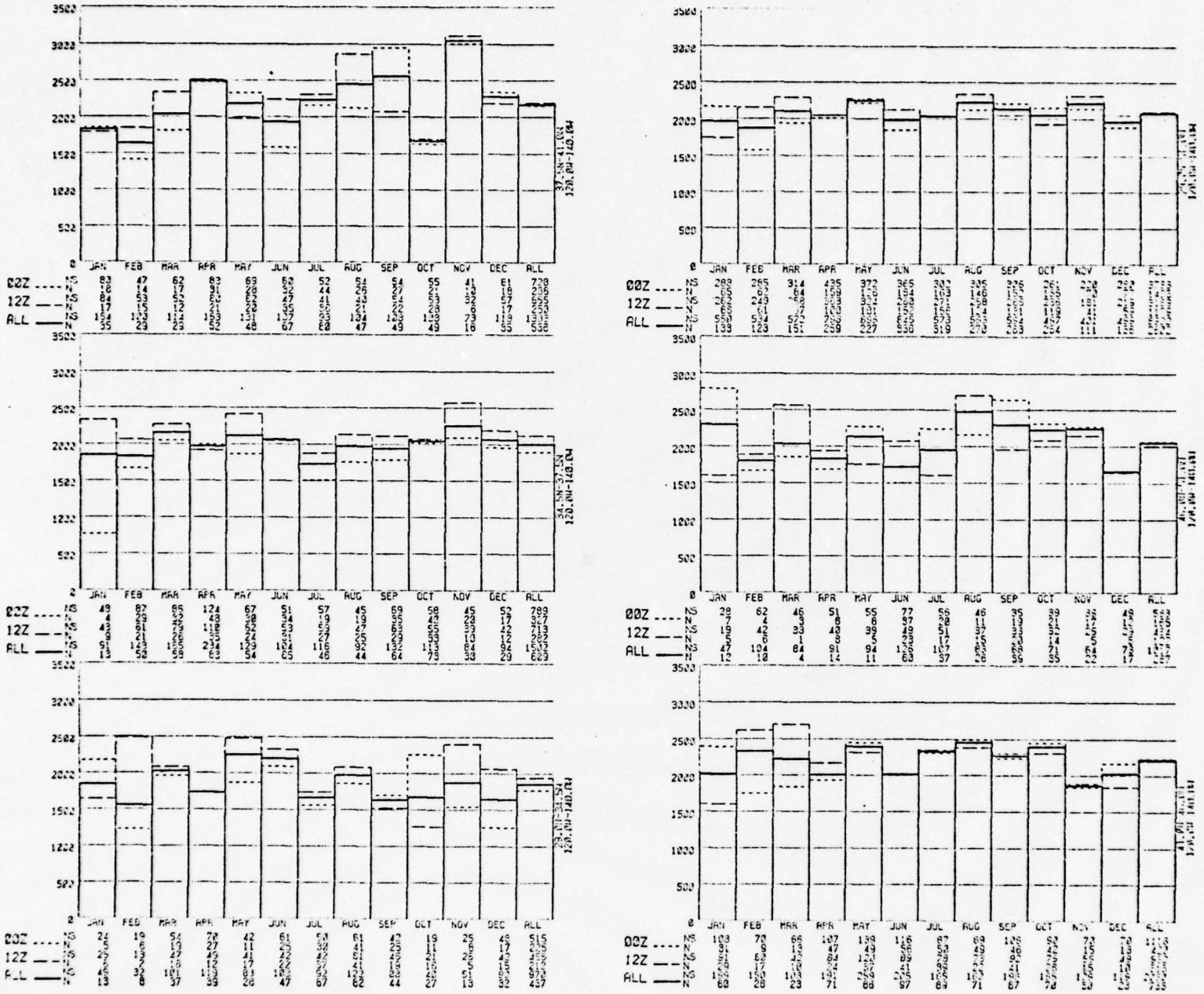
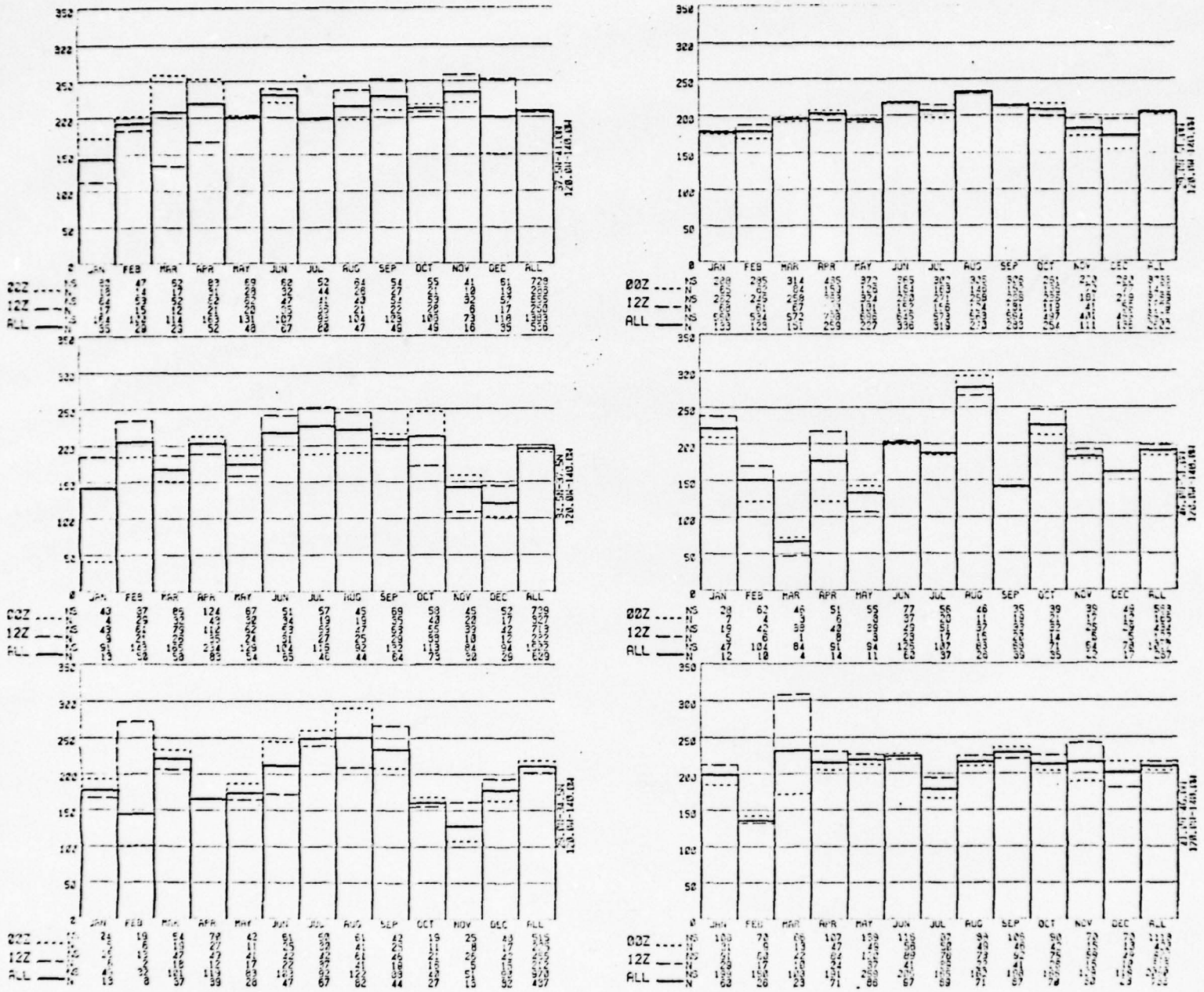


Figure 33. Monthly Mean Values of Thickness for Sub-Refractive Layers



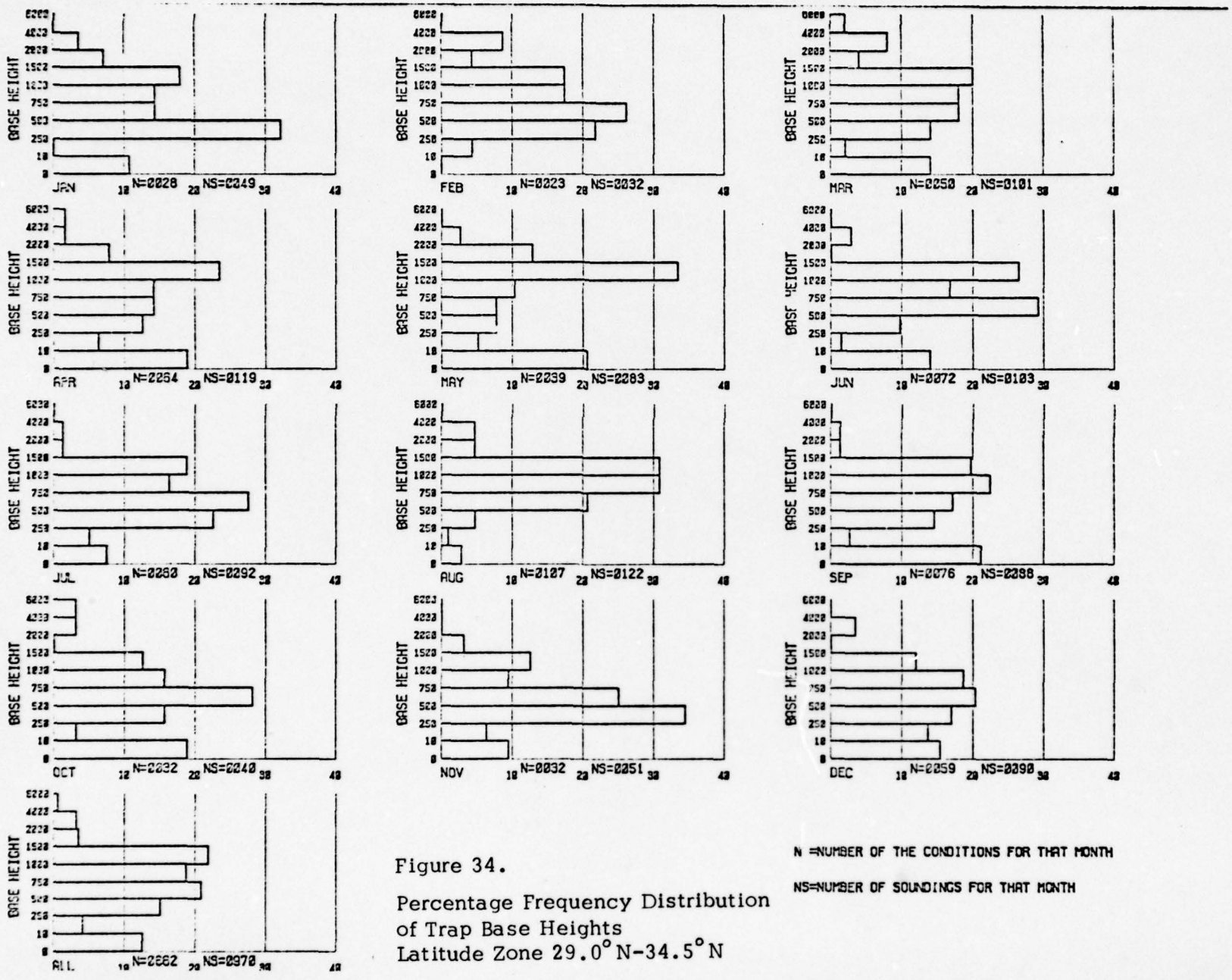


Figure 34.

Percentage Frequency Distribution
of Trap Base Heights
Latitude Zone 29.0°N-34.5°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

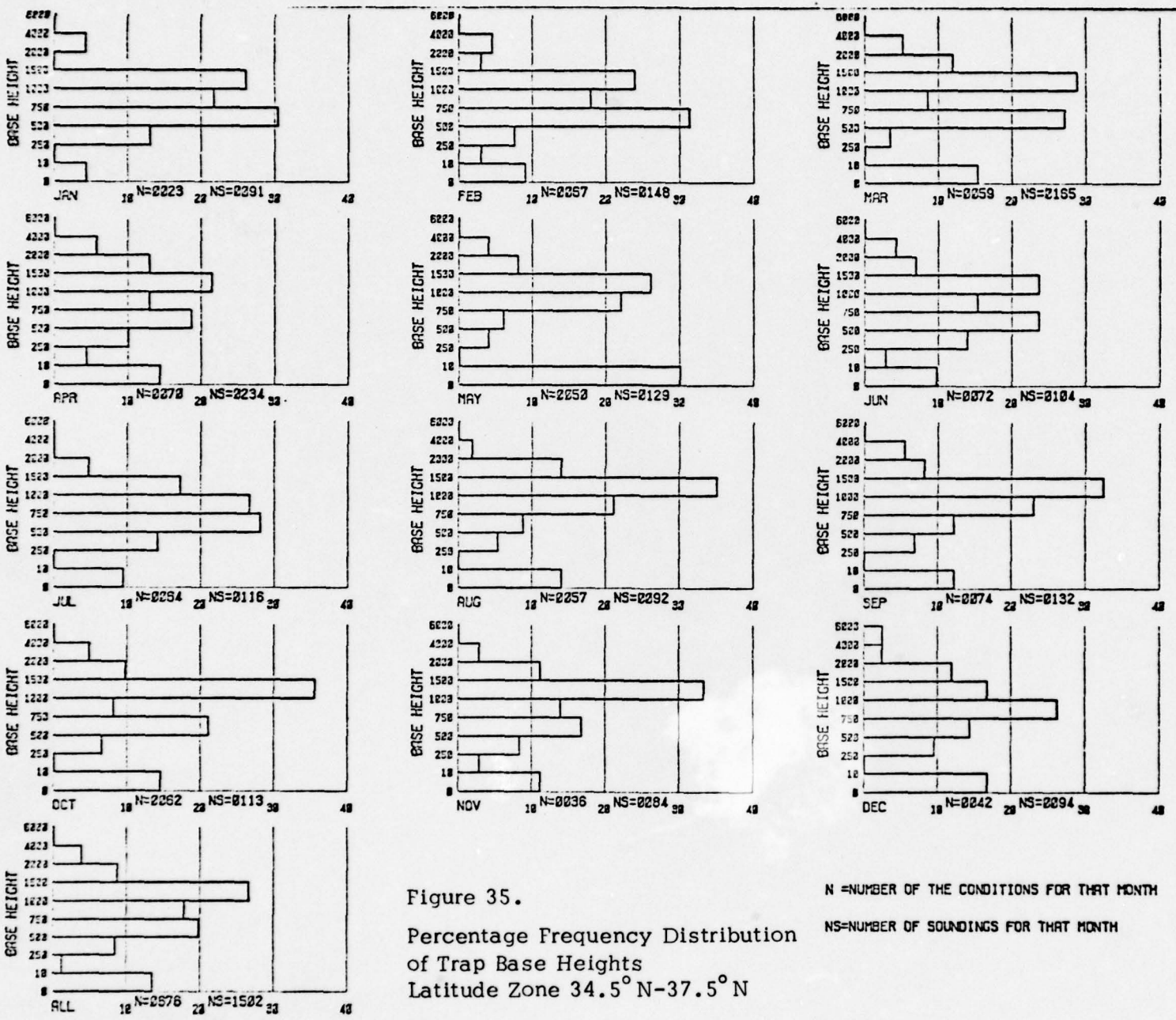


Figure 35.

Percentage Frequency Distribution
of Trap Base Heights
Latitude Zone 34.5°N-37.5°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

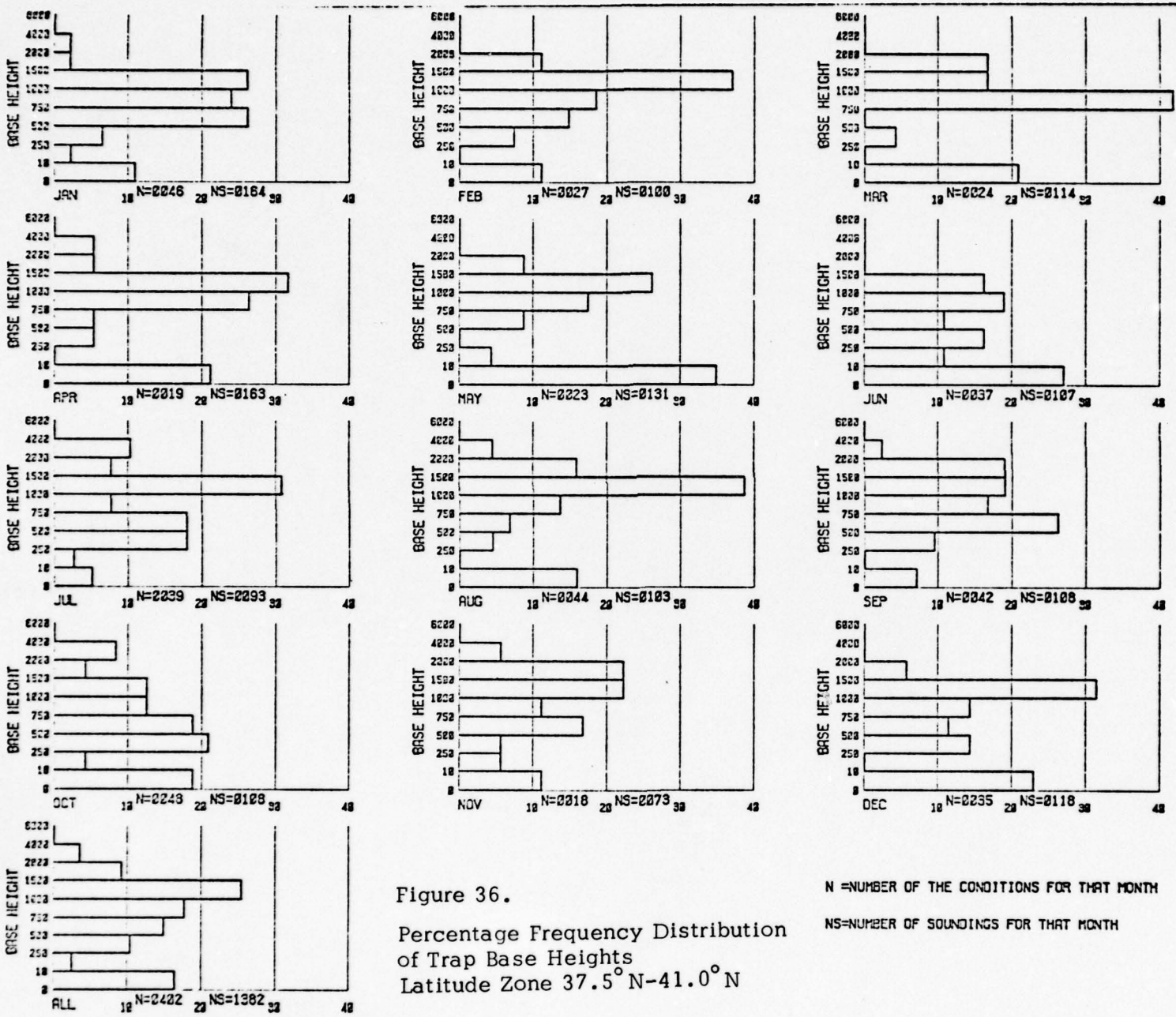


Figure 36.

Percentage Frequency Distribution of Trap Base Heights
Latitude Zone 37.5°N-41.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

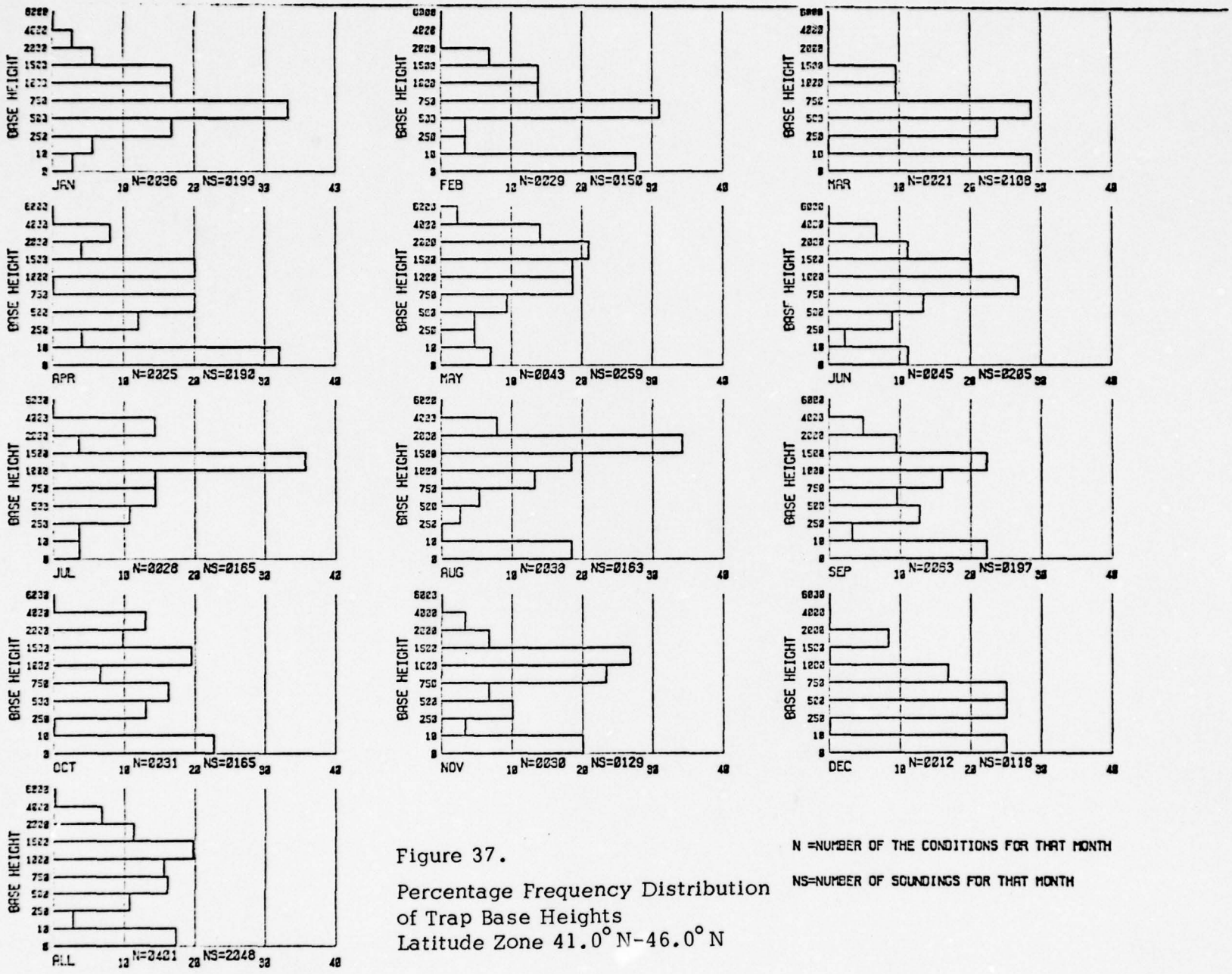


Figure 37.

Percentage Frequency Distribution of Trap Base Heights Latitude Zone 41.0° N-46.0° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

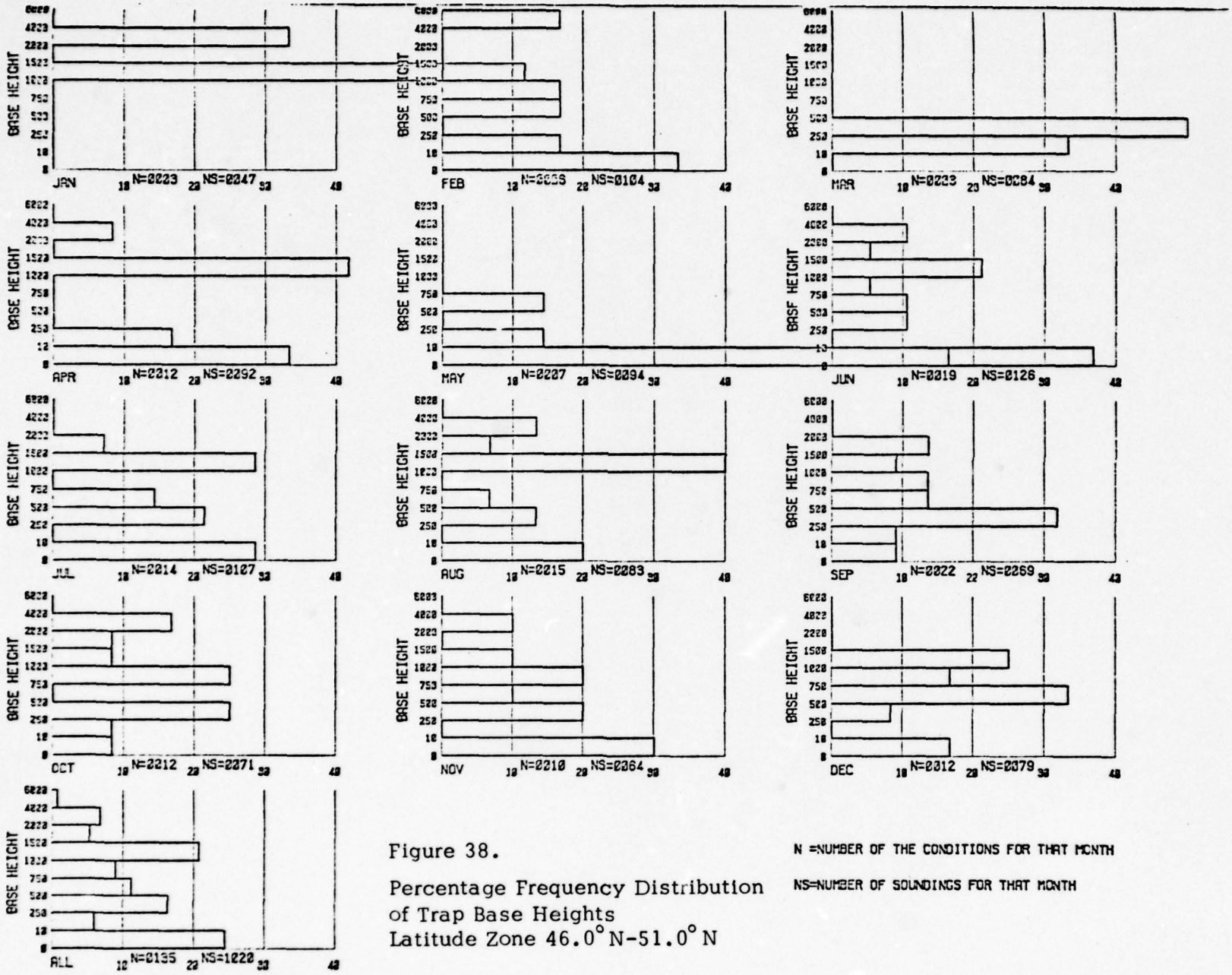


Figure 38.

Percentage Frequency Distribution of Trap Base Heights Latitude Zone 46.0°N-51.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

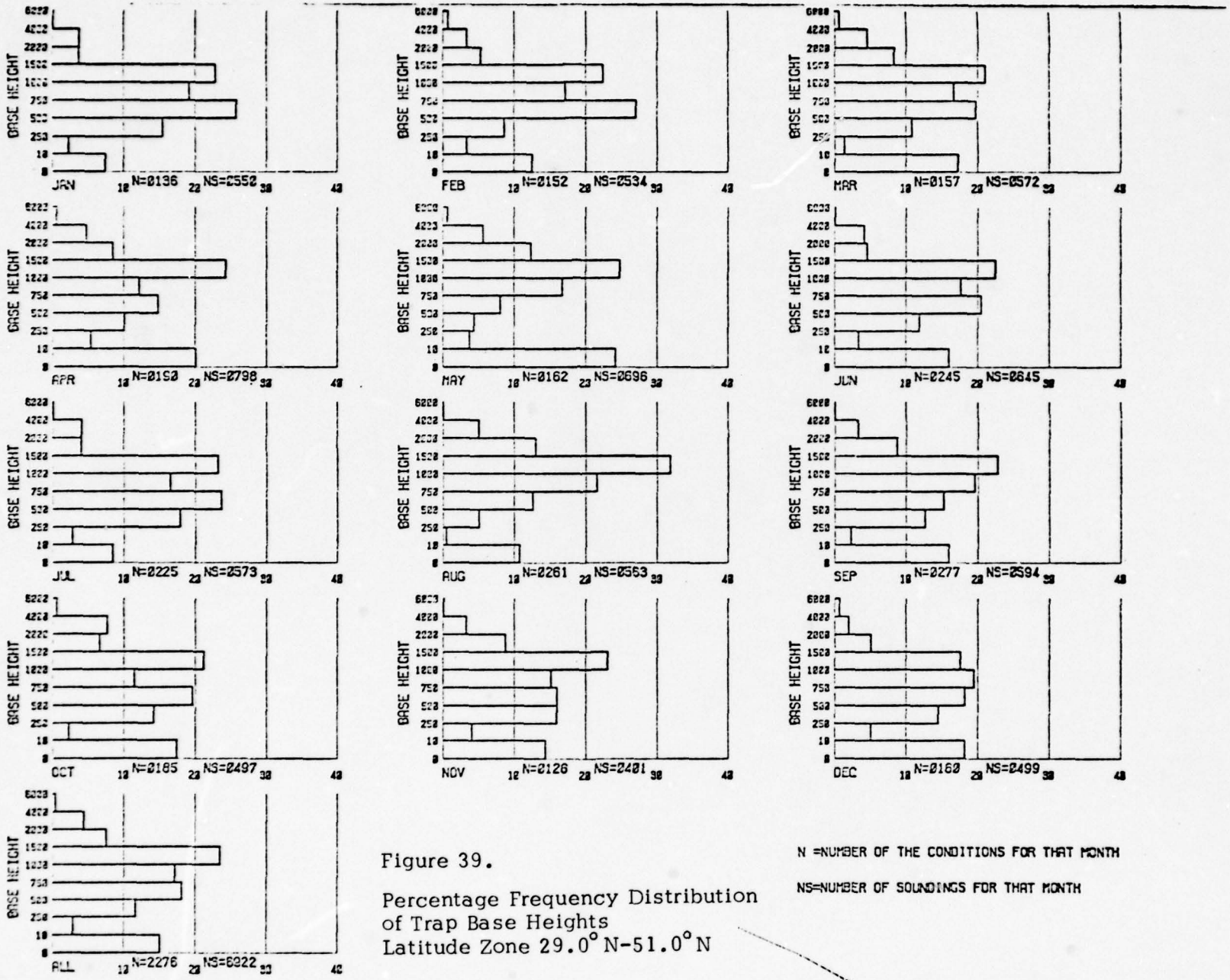


Figure 39.

Percentage Frequency Distribution
of Trap Base Heights
Latitude Zone 29.0° N-51.0° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

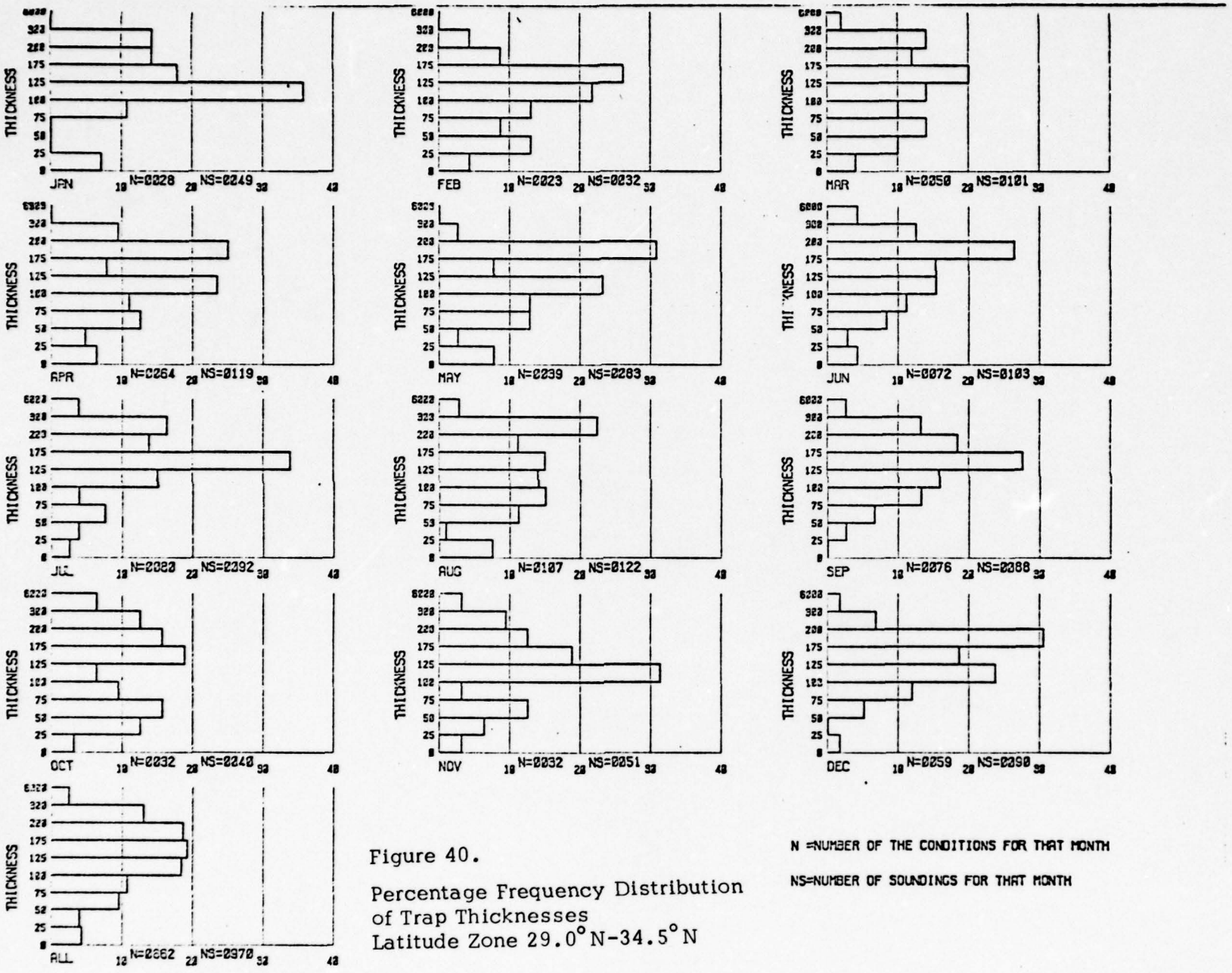


Figure 40.

Percentage Frequency Distribution of Trap Thicknesses
Latitude Zone 29.0°N-34.5°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

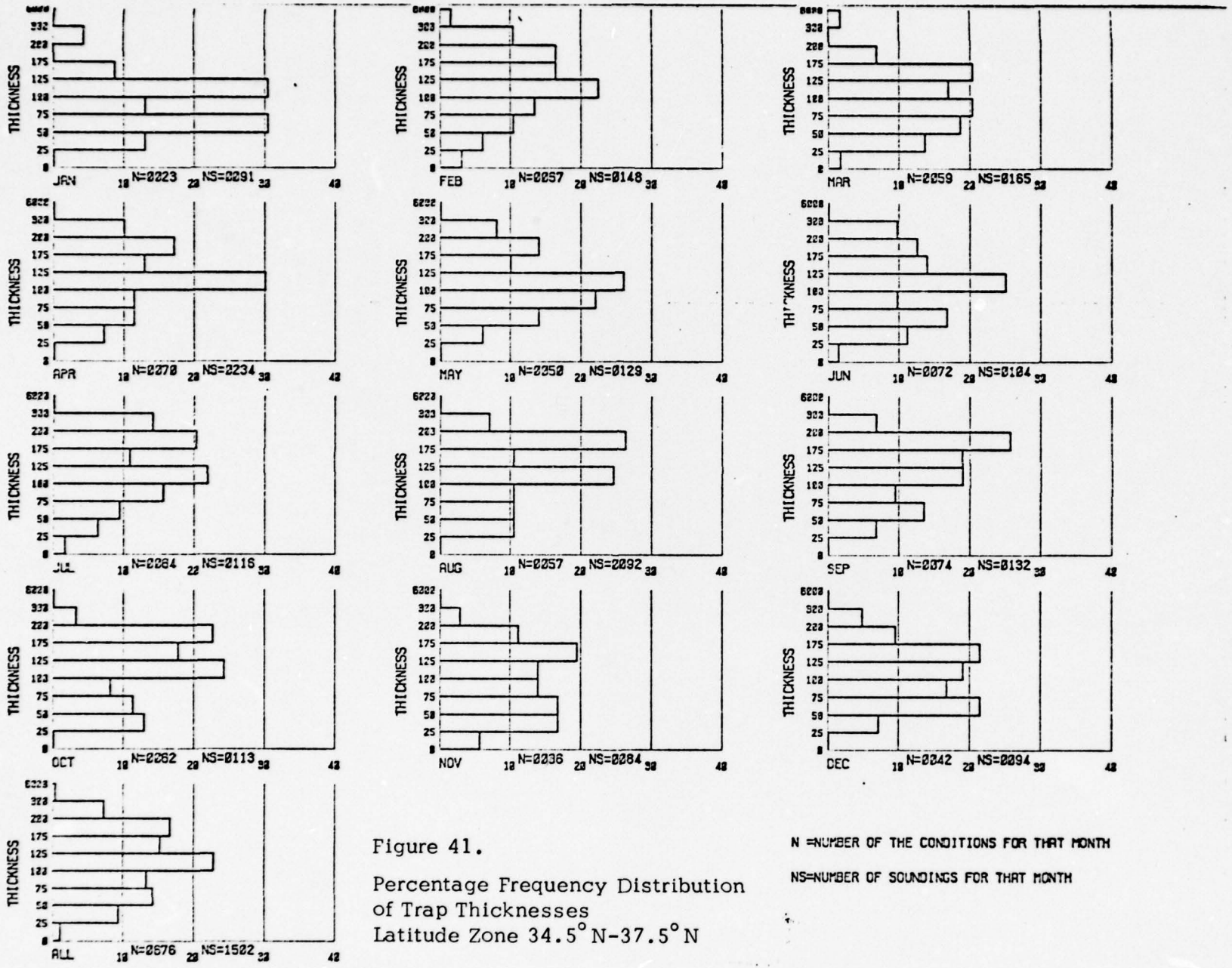


Figure 41.

Percentage Frequency Distribution
of Trap Thicknesses
Latitude Zone 34.5°N-37.5°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

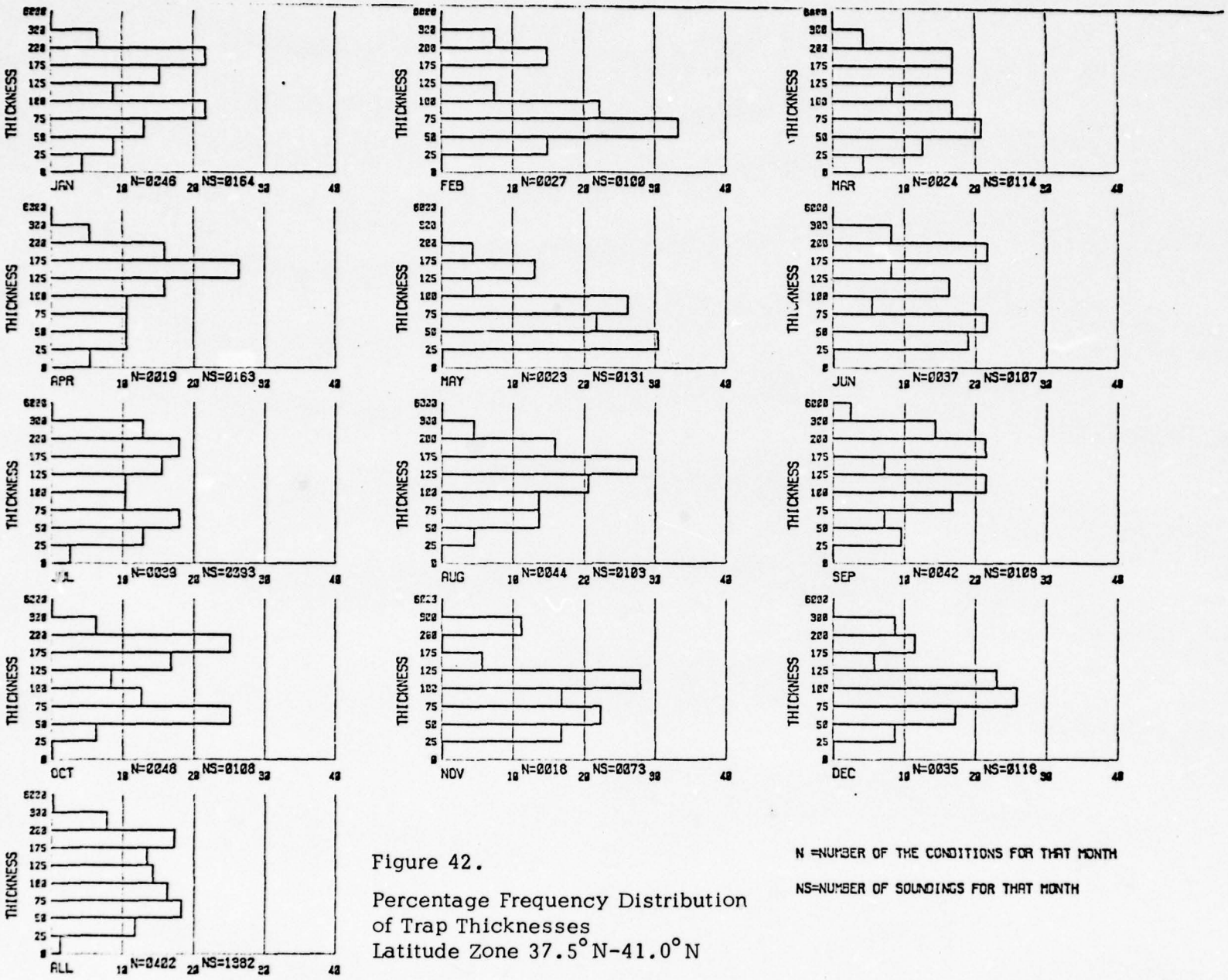


Figure 42.

Percentage Frequency Distribution
of Trap Thicknesses
Latitude Zone 37.5°N-41.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

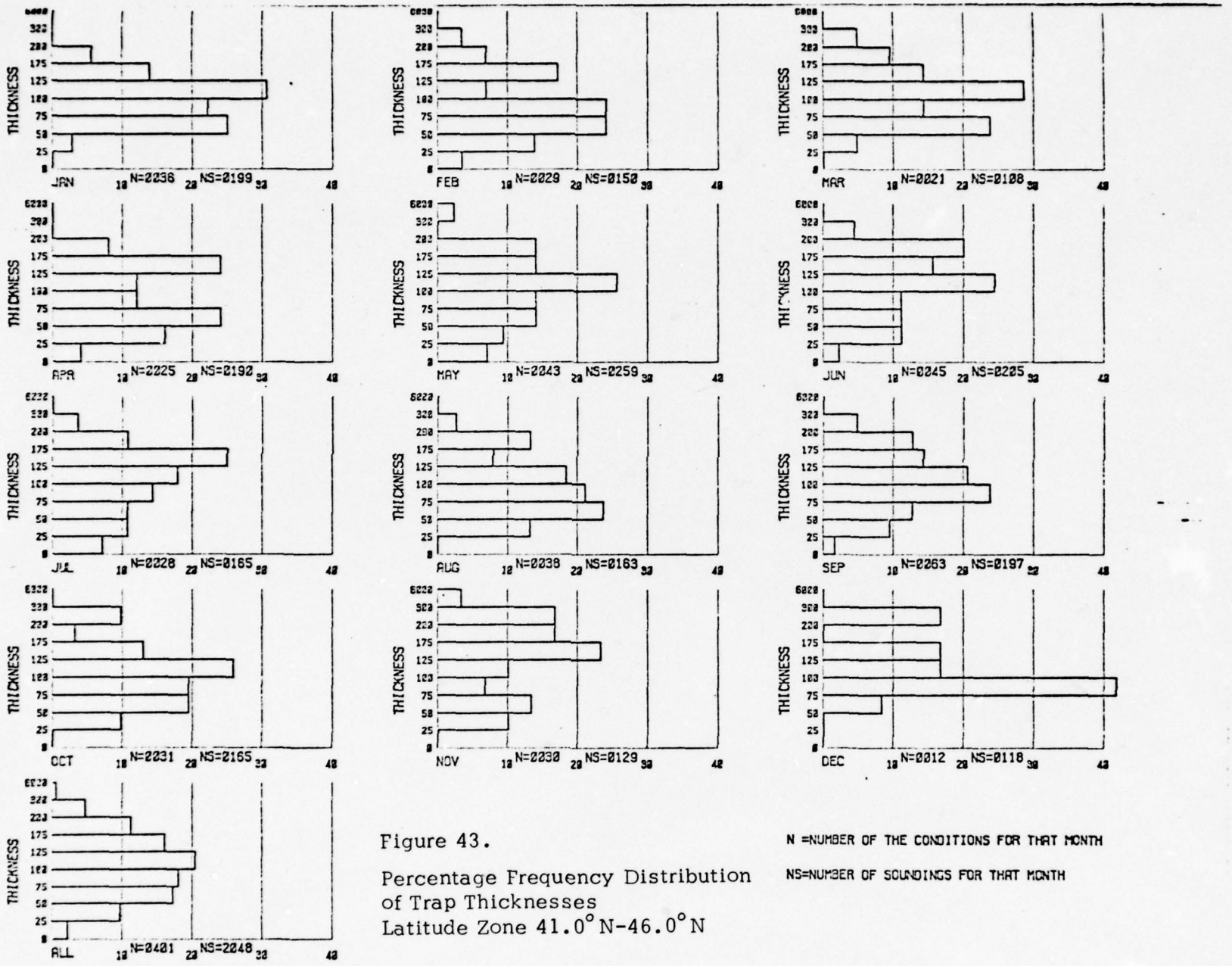


Figure 43.

Percentage Frequency Distribution of Trap Thicknesses Latitude Zone 41.0°N-46.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

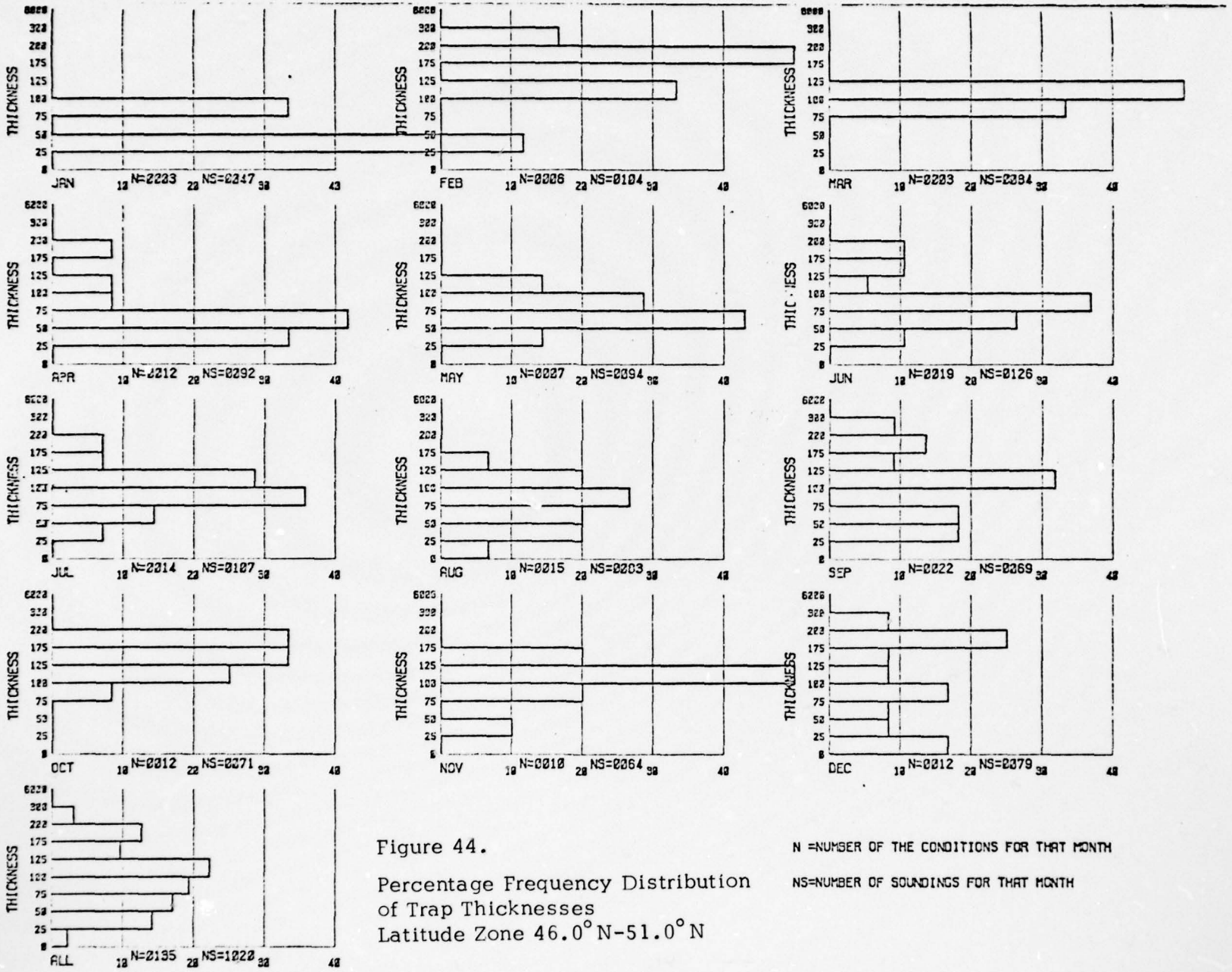


Figure 44.

Percentage Frequency Distribution of Trap Thicknesses
Latitude Zone 46.0°N-51.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

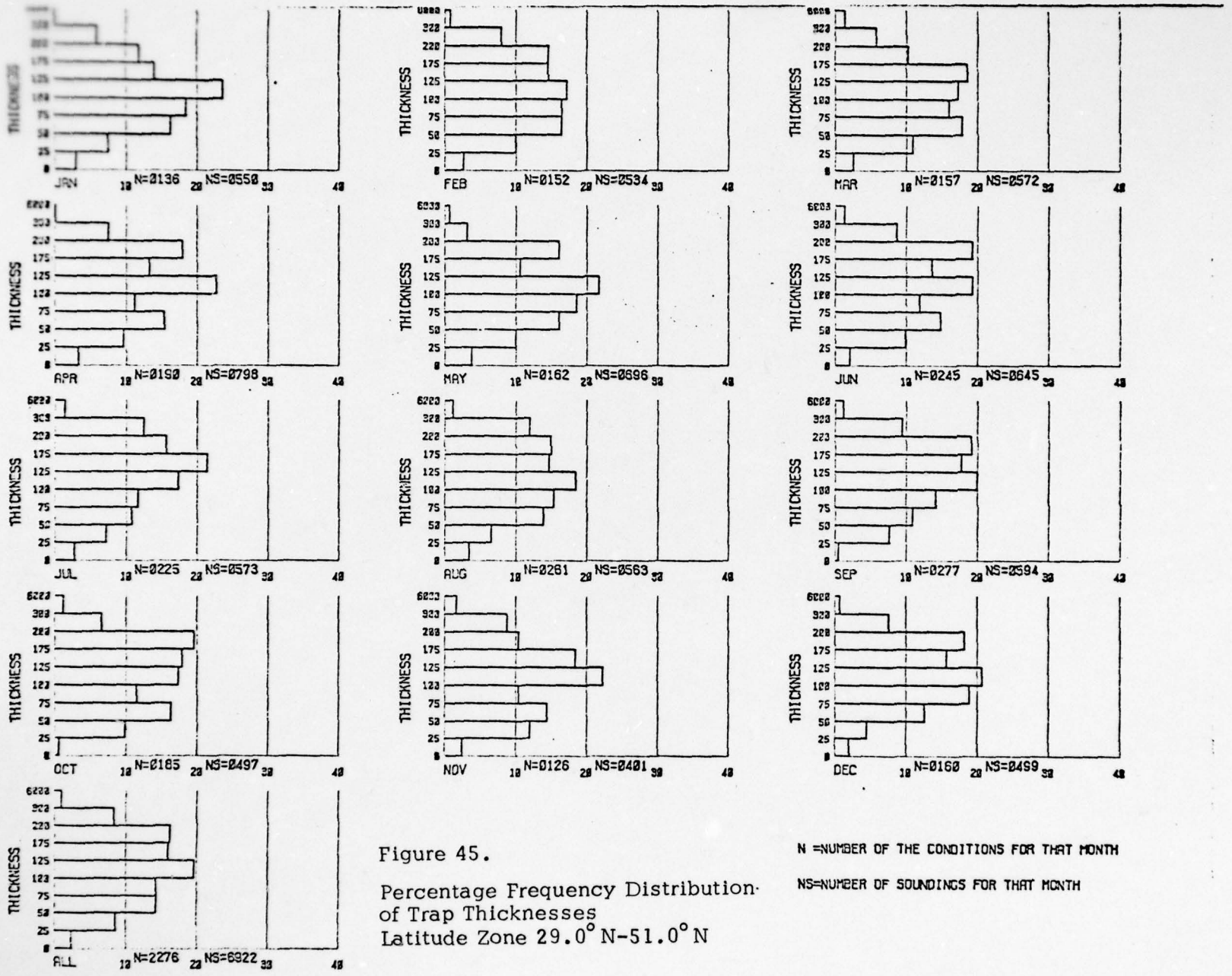


Figure 45.

Percentage Frequency Distribution of Trap Thicknesses
Latitude Zone 29.0° N-51.0° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

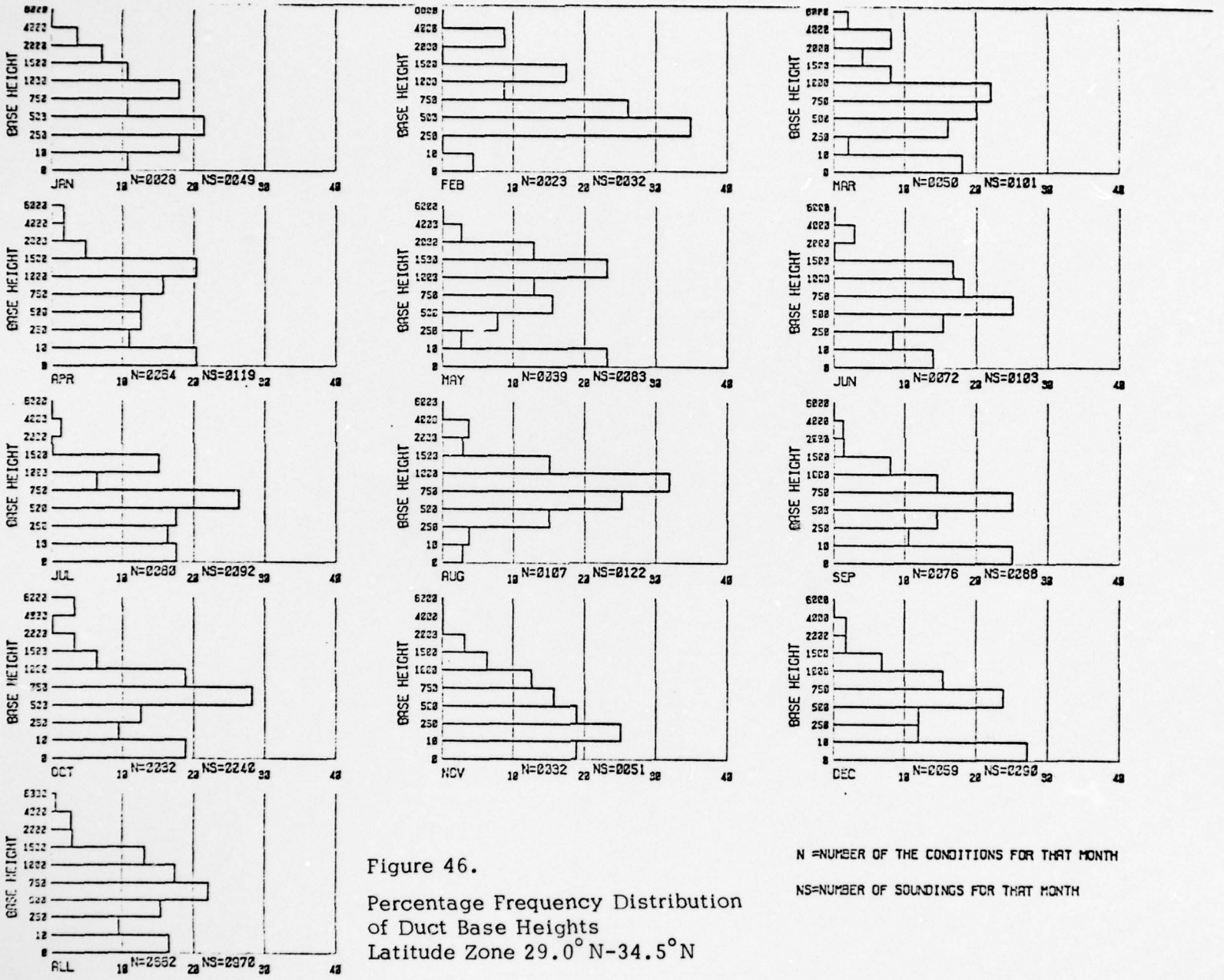


Figure 46.

Percentage Frequency Distribution of Duct Base Heights Latitude Zone 29.0° N-34.5° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

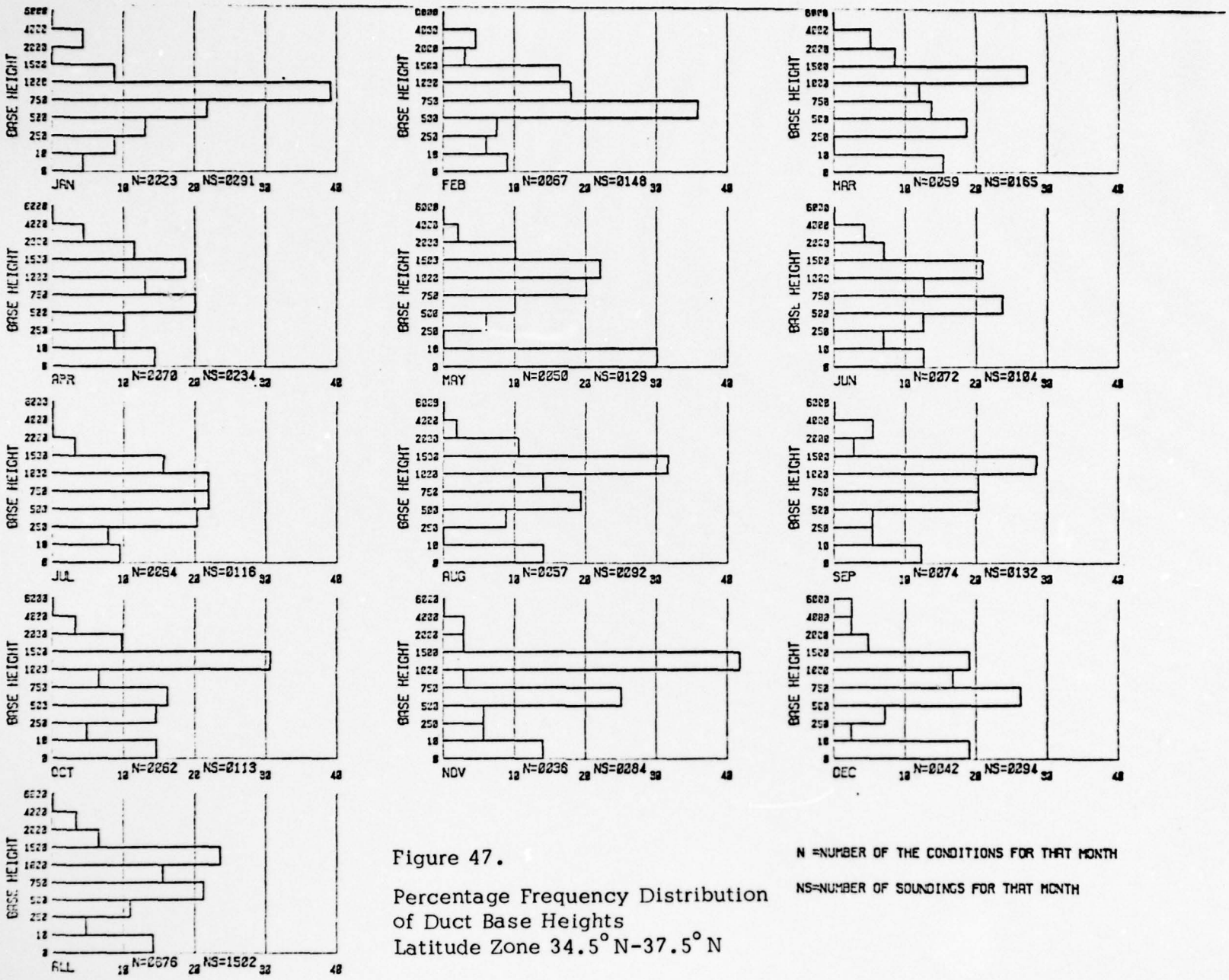


Figure 47.

Percentage Frequency Distribution of Duct Base Heights Latitude Zone 34.5°N-37.5°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

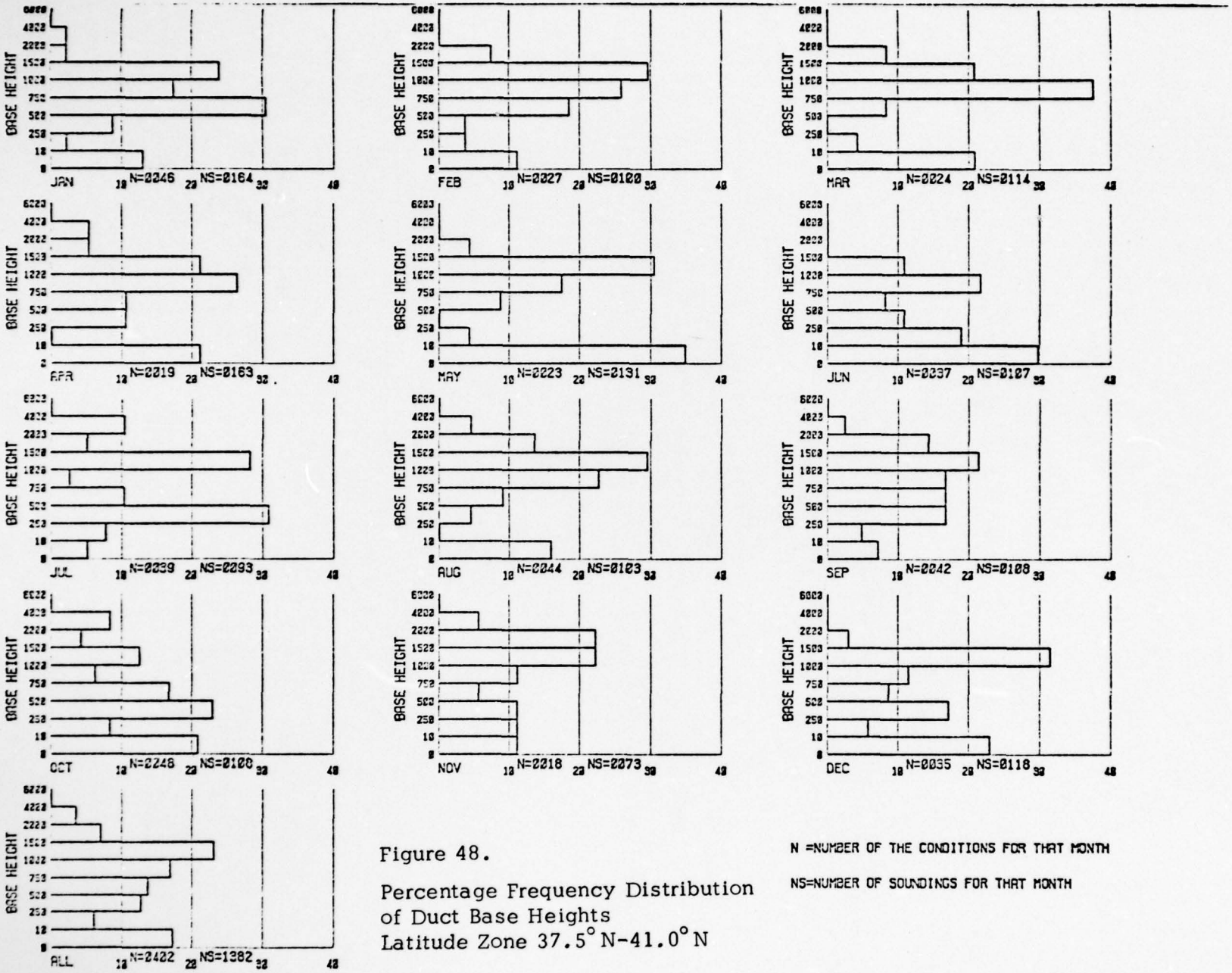


Figure 48.

Percentage Frequency Distribution of Duct Base Heights Latitude Zone 37.5° N-41.0° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

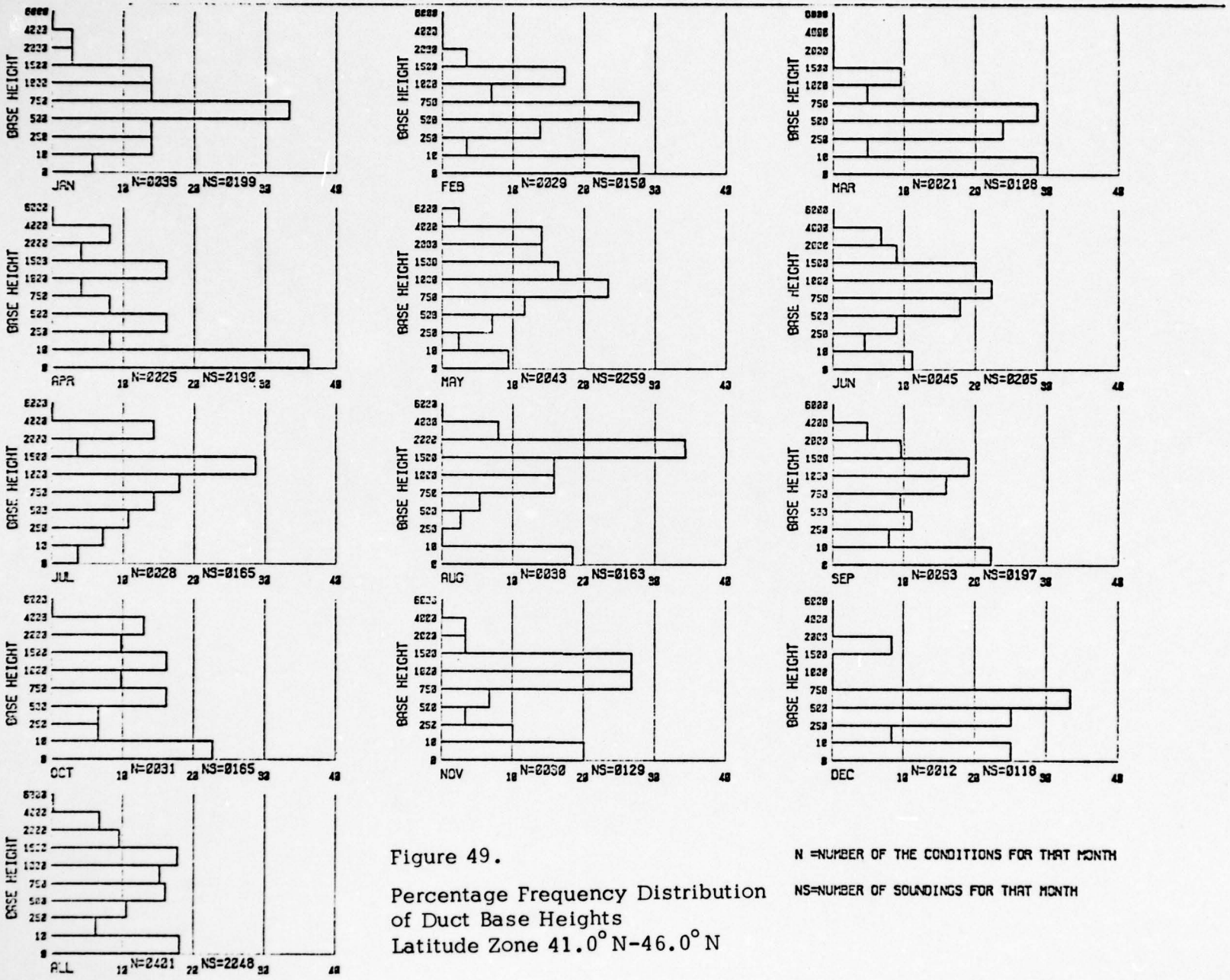


Figure 49.

Percentage Frequency Distribution of Duct Base Heights
Latitude Zone 41.0° N-46.0° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

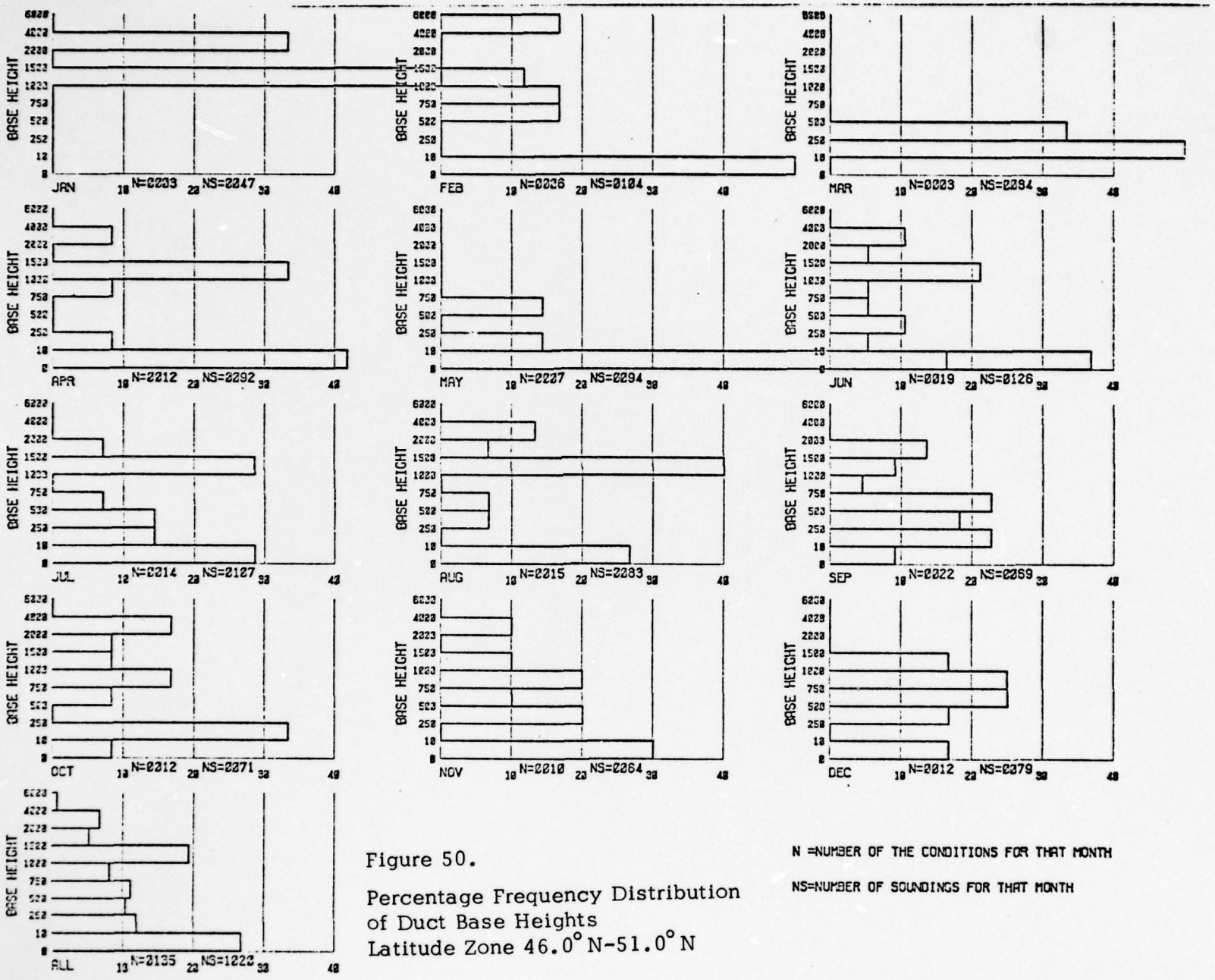


Figure 50.

Percentage Frequency Distribution of Duct Base Heights Latitude Zone 46.0° N-51.0° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

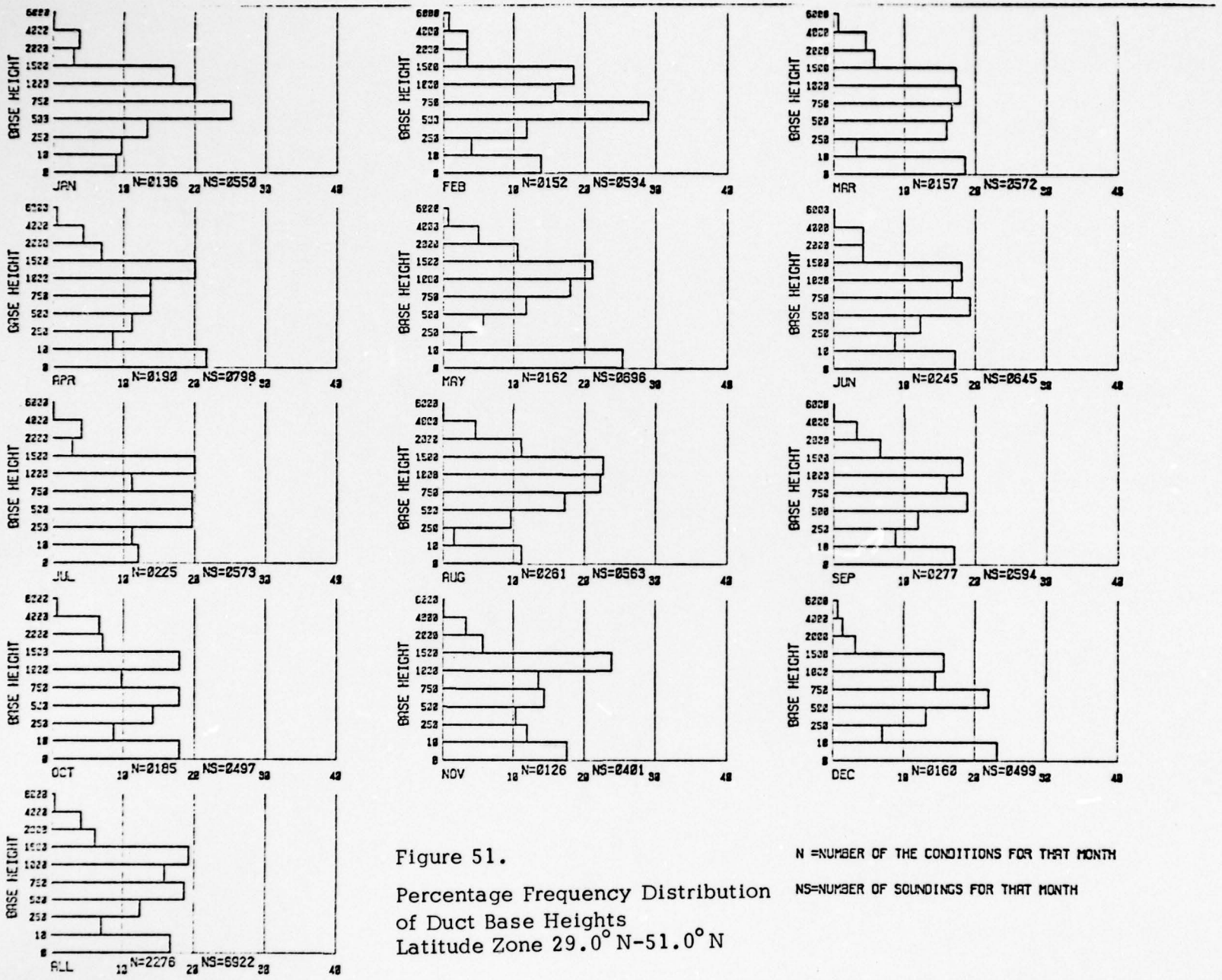


Figure 51.

Percentage Frequency Distribution of Duct Base Heights
Latitude Zone 29.0° N-51.0° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

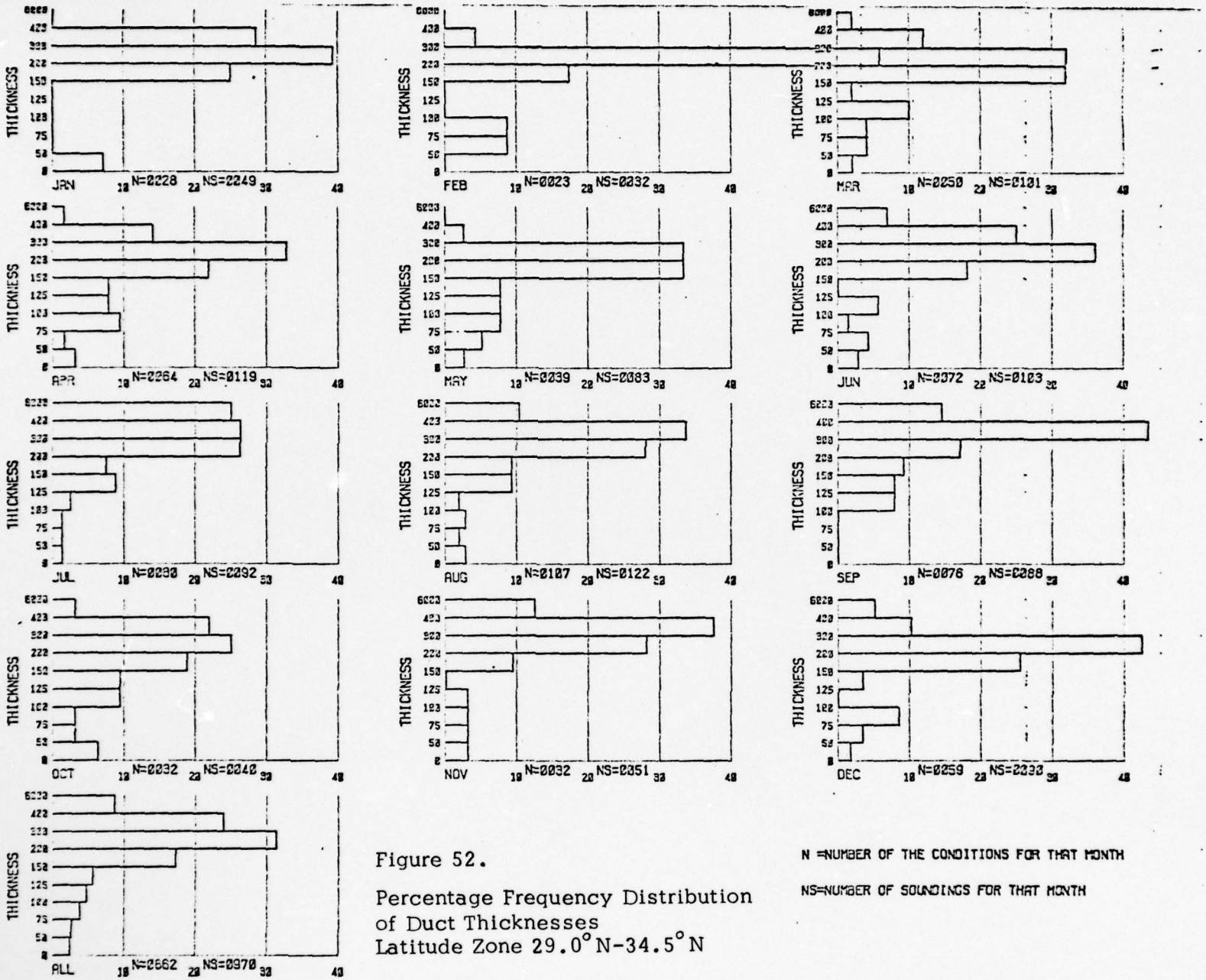


Figure 52.

Percentage Frequency Distribution of Duct Thicknesses Latitude Zone 29.0°N-34.5°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

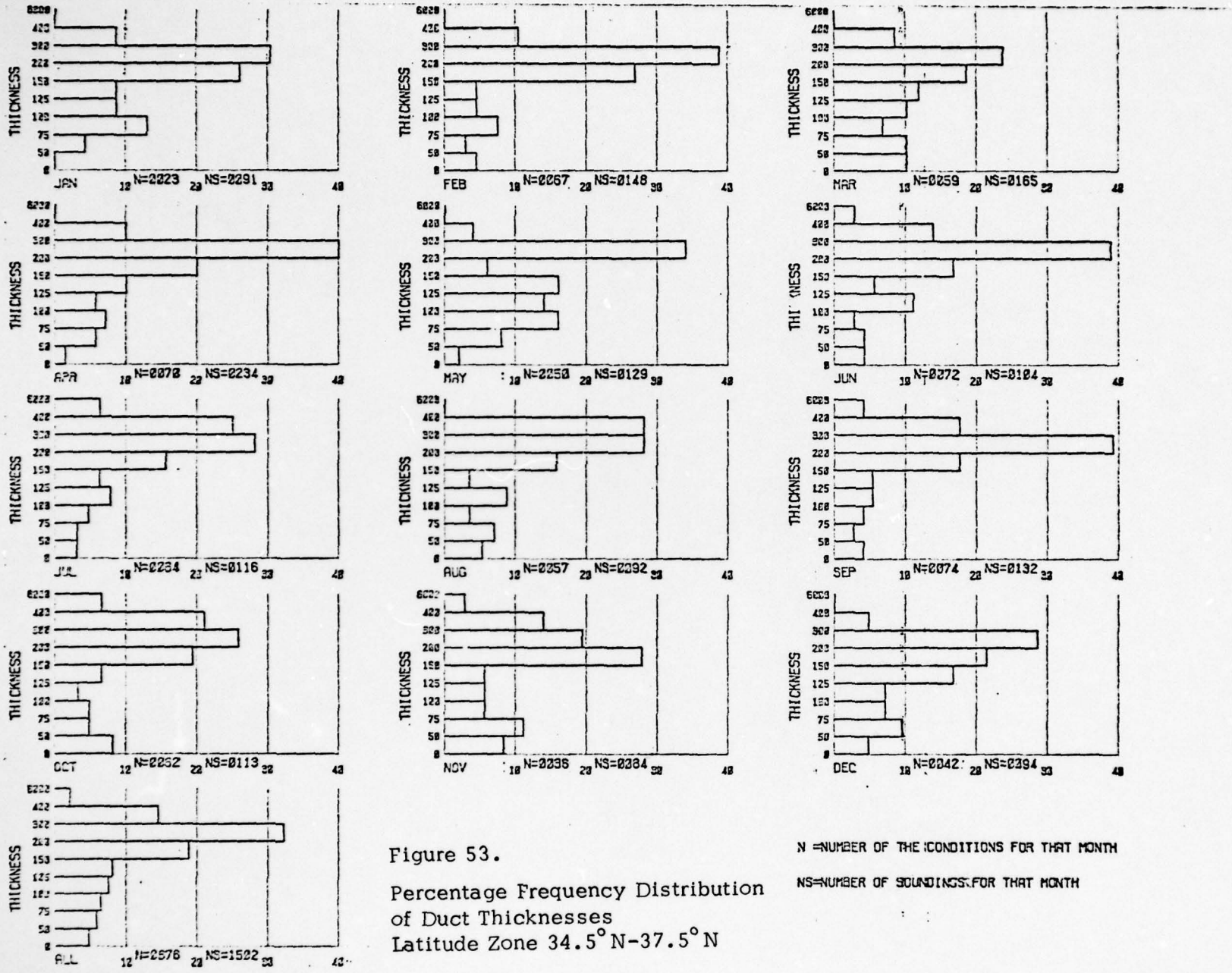


Figure 53.

Percentage Frequency Distribution
of Duct Thicknesses
Latitude Zone 34.5°N-37.5°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

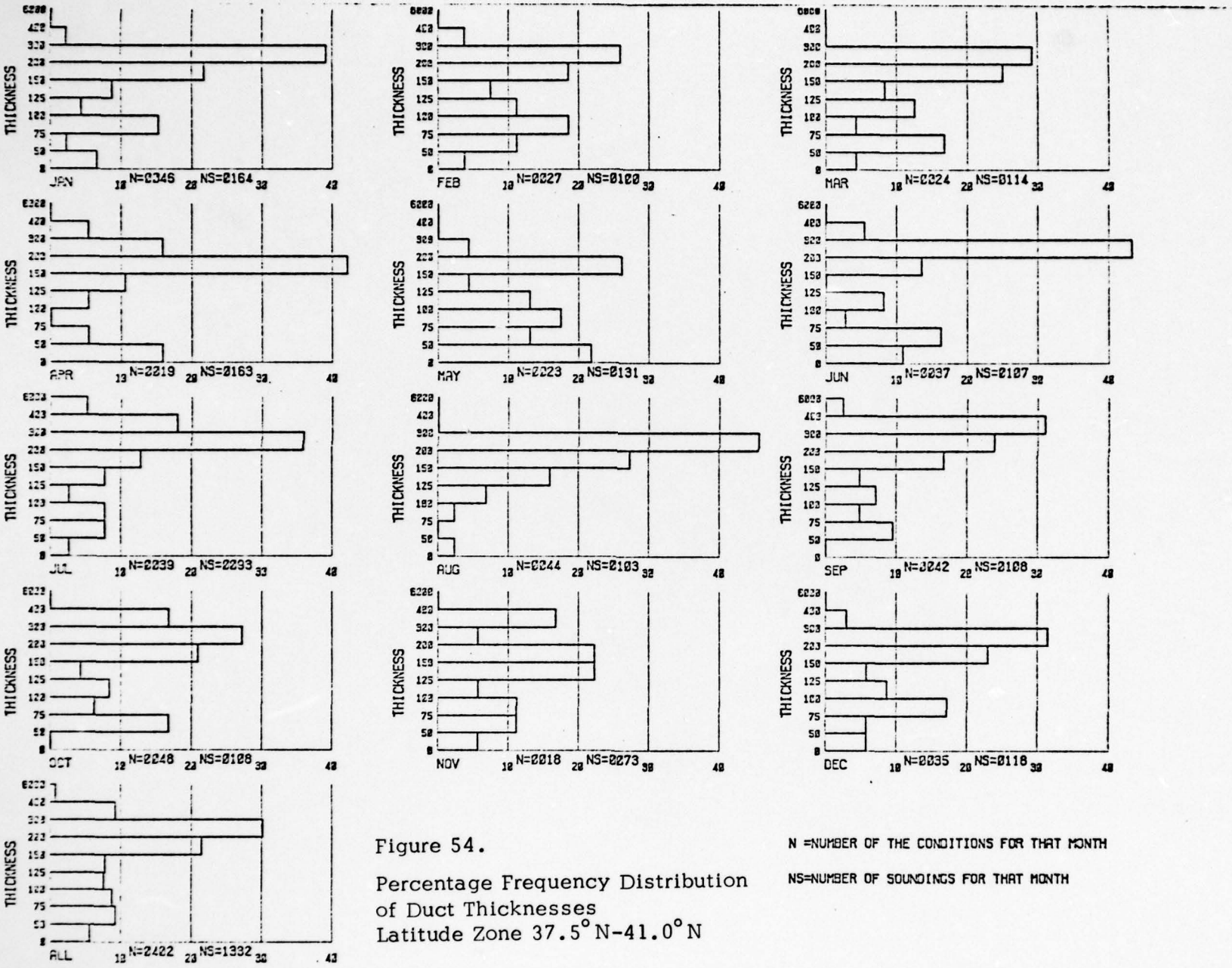


Figure 54.

Percentage Frequency Distribution of Duct Thicknesses Latitude Zone 37.5°N-41.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

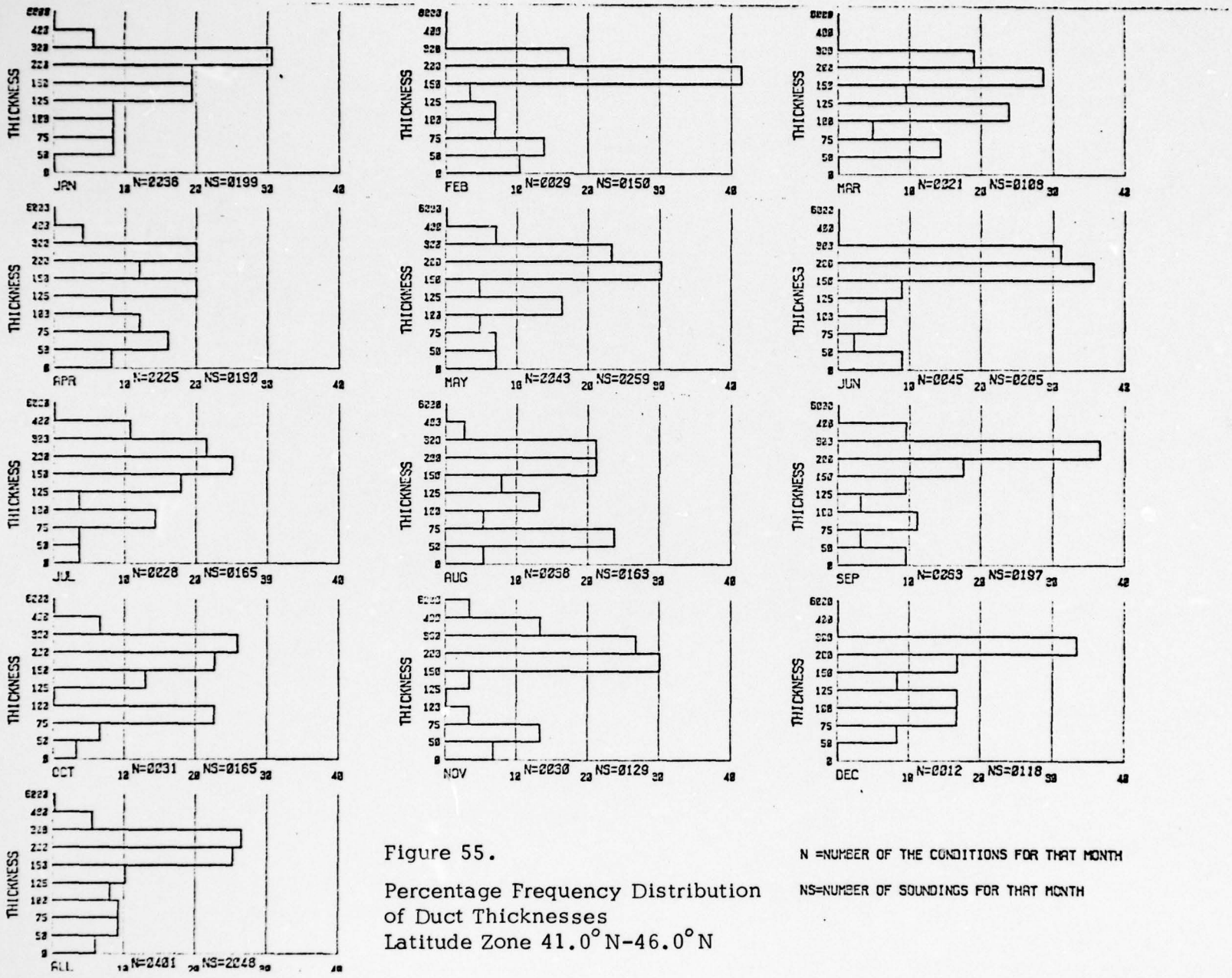


Figure 55.

Percentage Frequency Distribution
of Duct Thicknesses
Latitude Zone 41.0°N-46.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

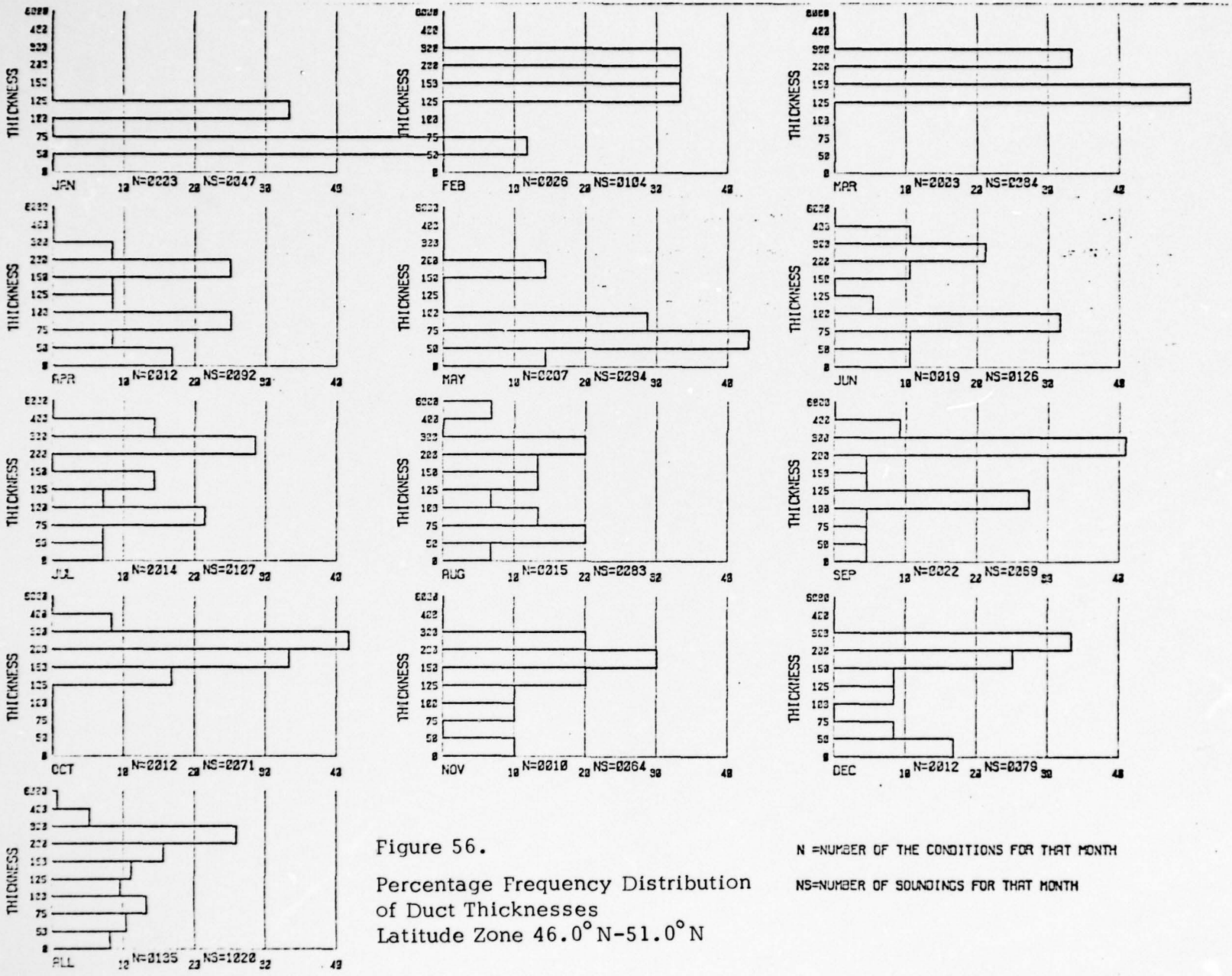


Figure 56.

Percentage Frequency Distribution of Duct Thicknesses
Latitude Zone 46.0°N-51.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

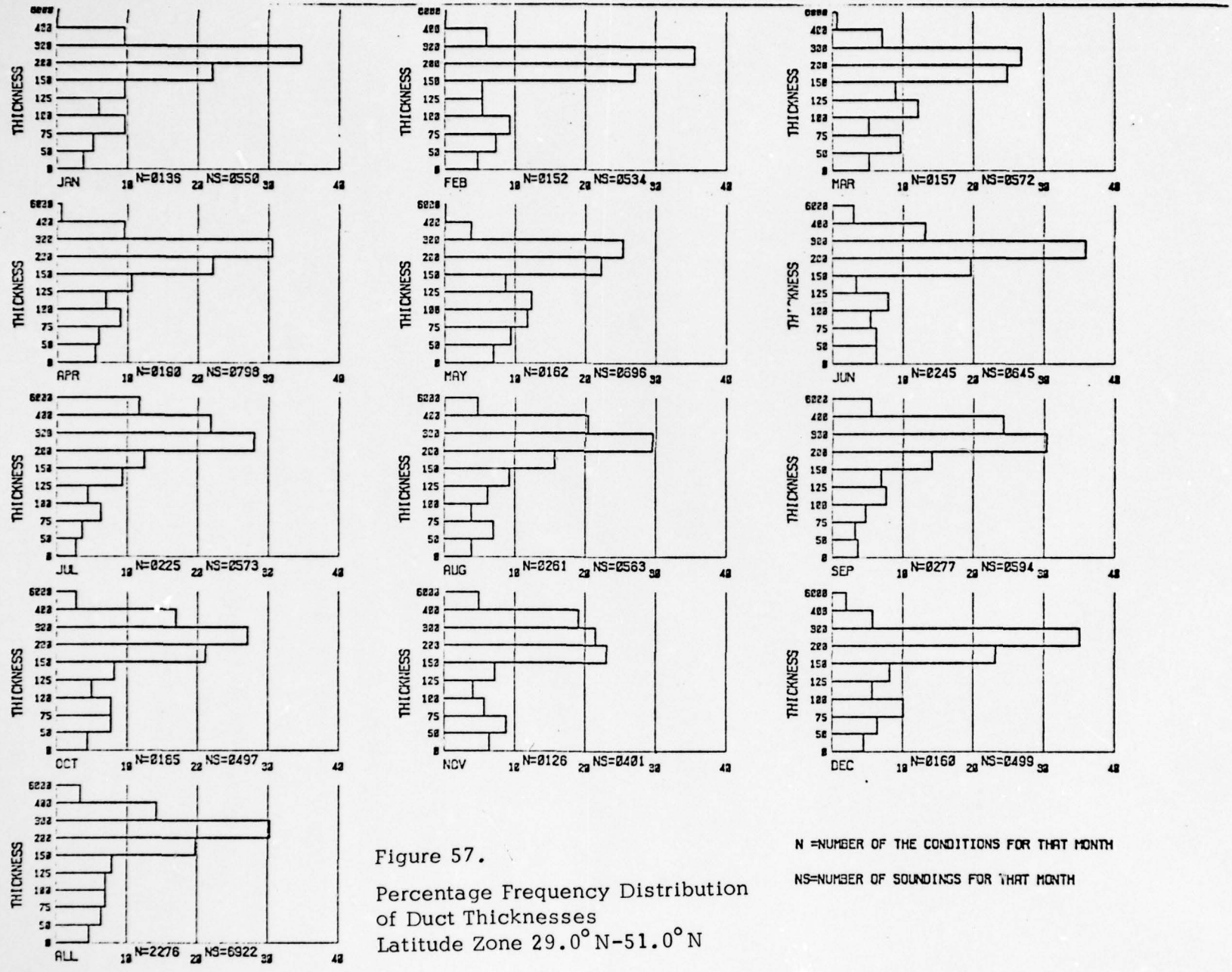


Figure 57.

Percentage Frequency Distribution
of Duct Thicknesses
Latitude Zone 29.0°N-51.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

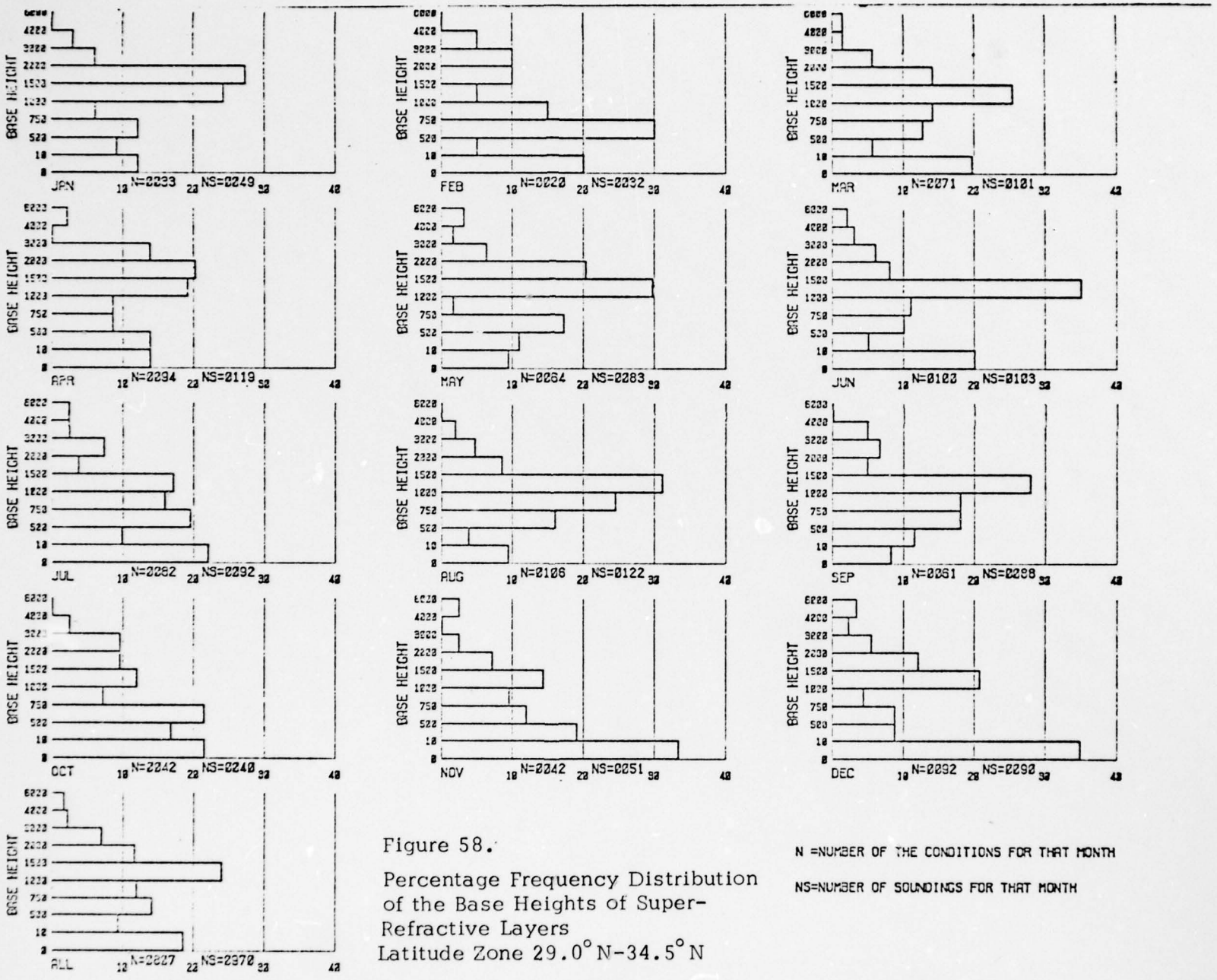


Figure 58.

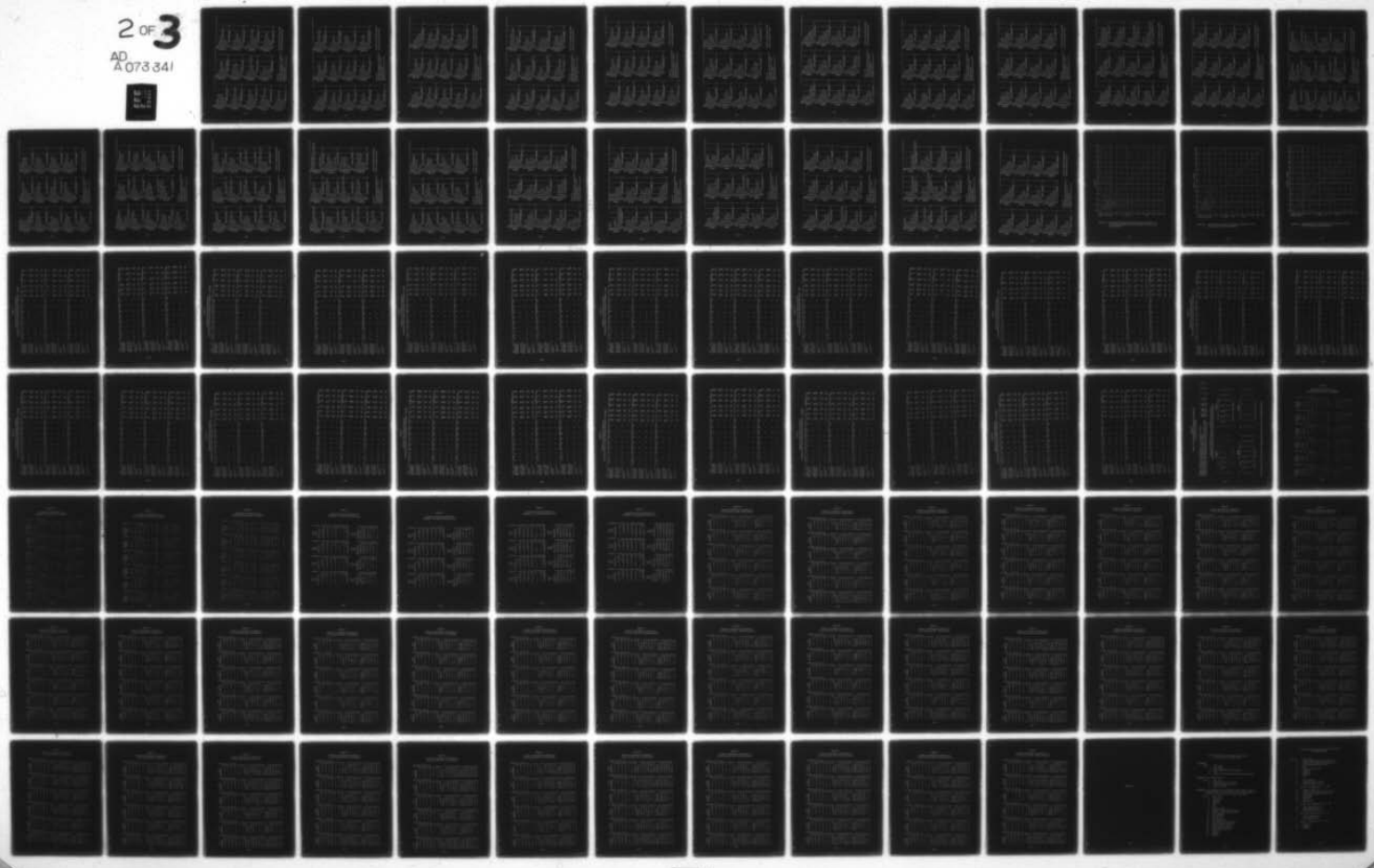
Percentage Frequency Distribution of the Base Heights of Super-Refractive Layers
Latitude Zone 29.0°N-34.5°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

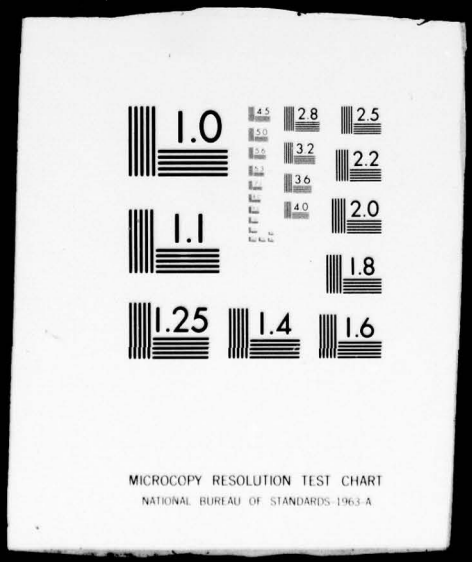
AD-A073 341 METEOROLOGY INTERNATIONAL INC MONTEREY CALIF F/G 4/2
DEVELOPMENT OF A SYNOPTIC CLIMATOLOGY OF TROPOSPHERIC REFRACTIV--ETC(U)
APR 77 P P KALINYAK N00228-76-C-3139
UNCLASSIFIED MII-M-226 NEPRF-TR-2-77 (MII) NL

2 OF 3
AD A073 341



2 OF 3

AD
A073341



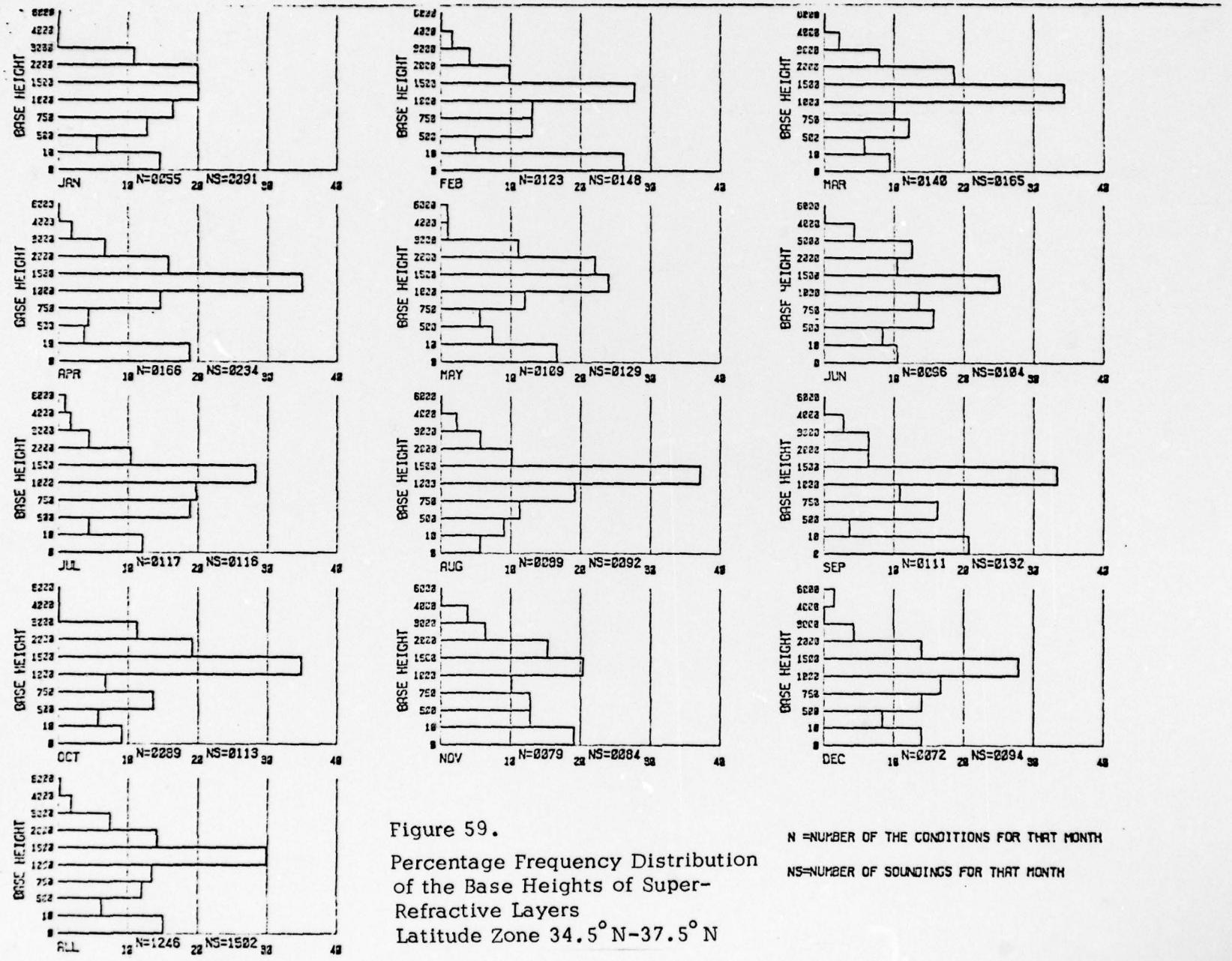


Figure 59.

Percentage Frequency Distribution of the Base Heights of Super-Refractive Layers
Latitude Zone 34.5°N-37.5°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

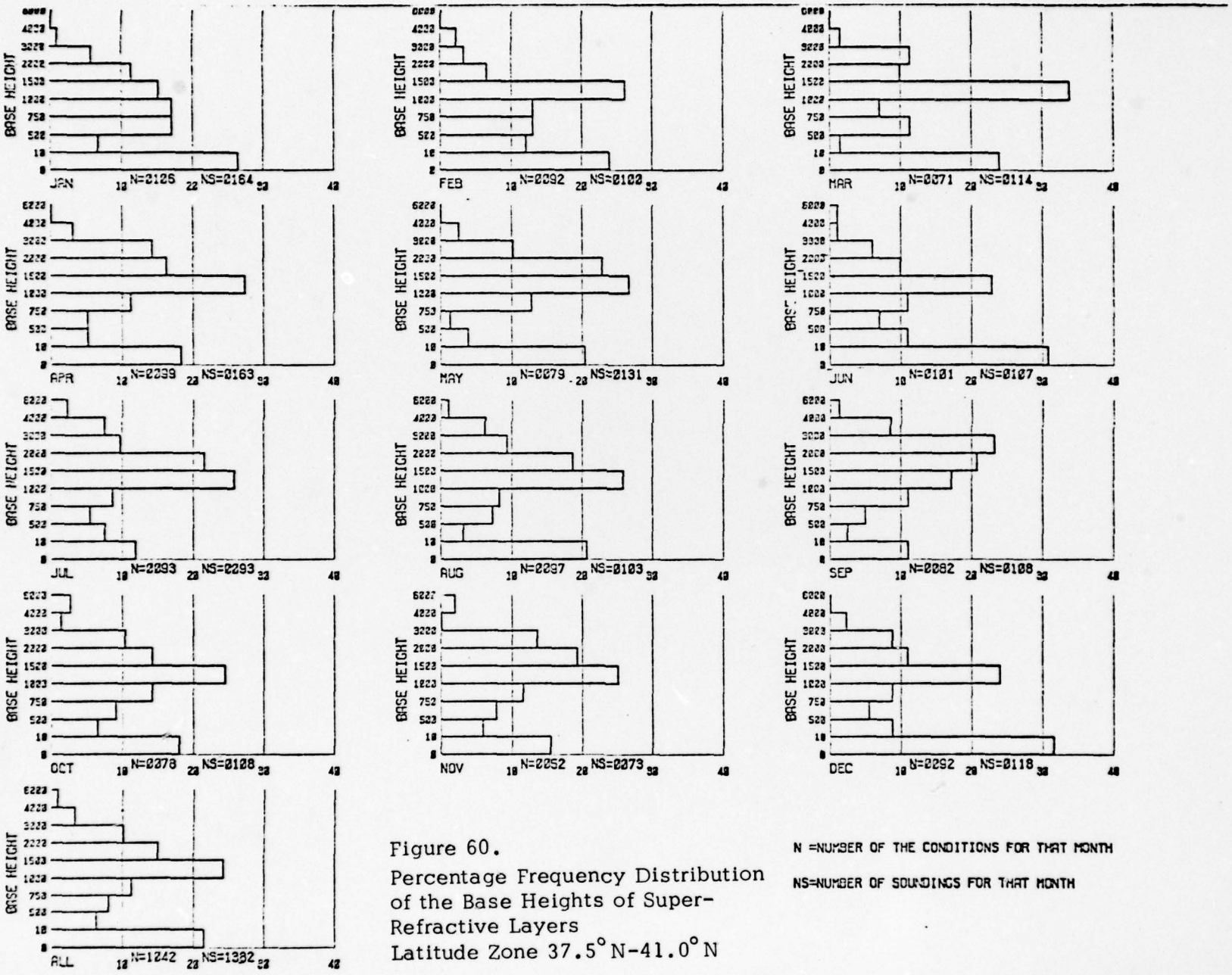


Figure 60.
Percentage Frequency Distribution of the Base Heights of Super-Refractive Layers
Latitude Zone 37.5°N-41.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

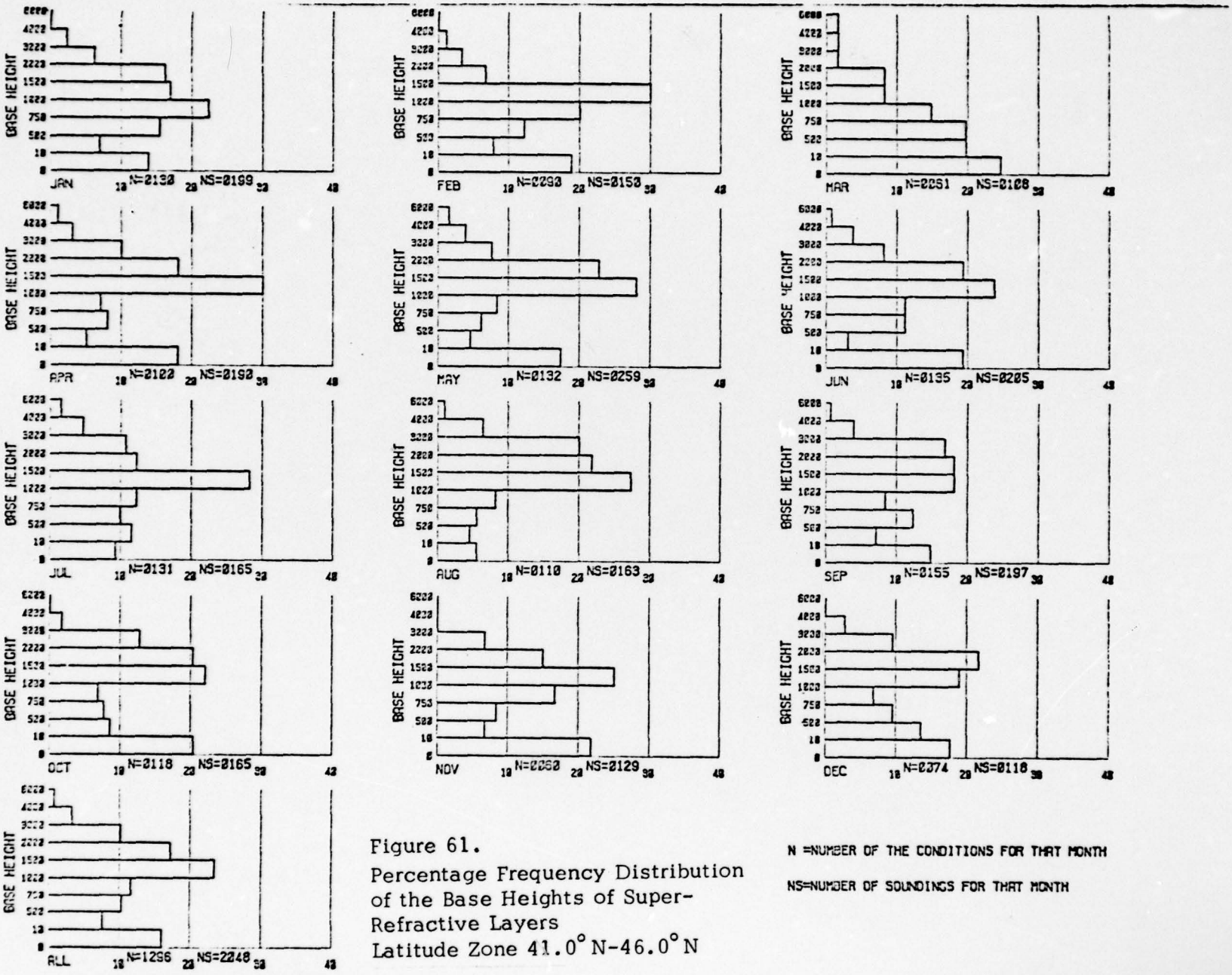


Figure 61.
Percentage Frequency Distribution of the Base Heights of Super-Refractive Layers
Latitude Zone 41.0° N-46.0° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

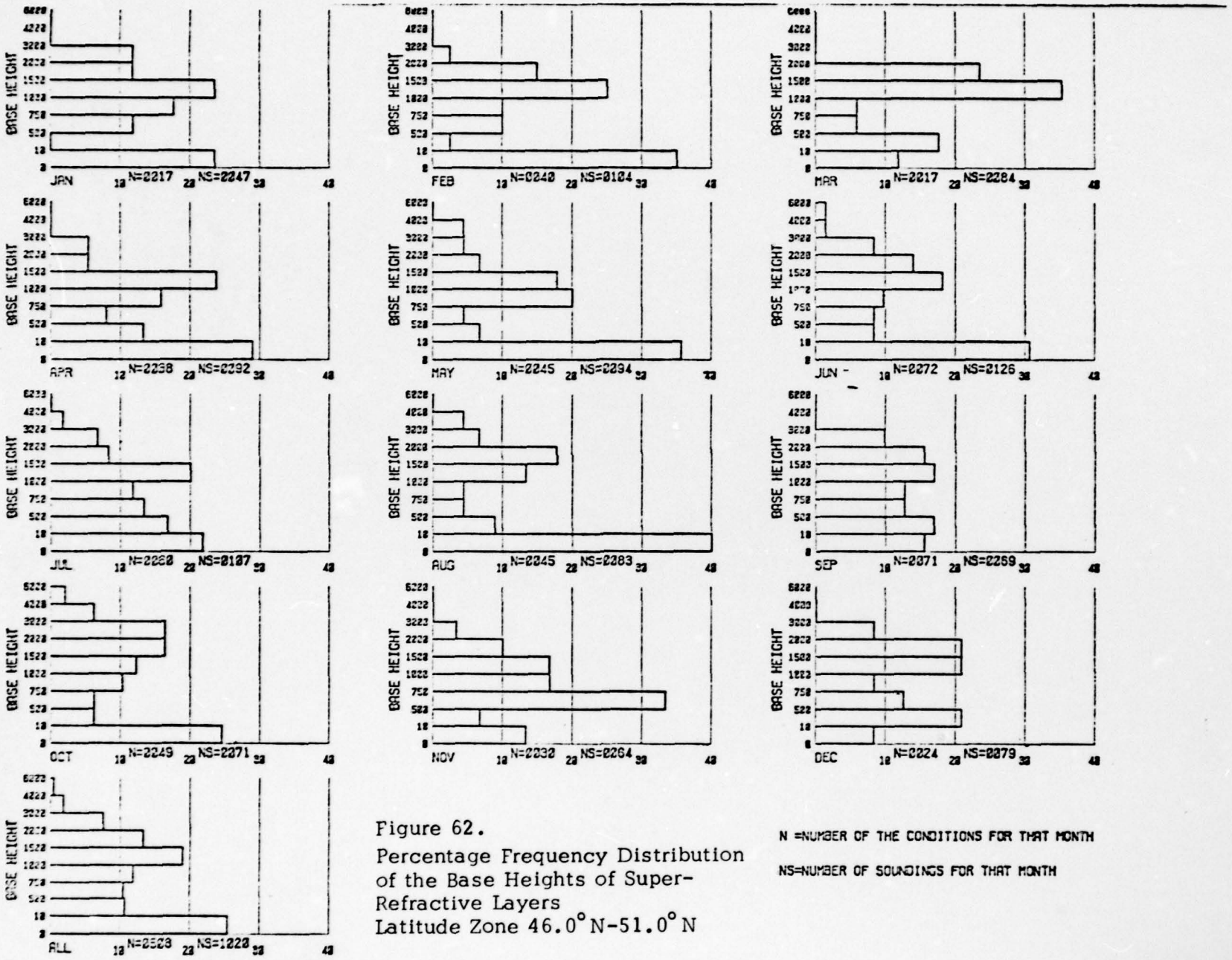


Figure 62.
Percentage Frequency Distribution of the Base Heights of Super-Refractive Layers
Latitude Zone 46.0°N-51.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

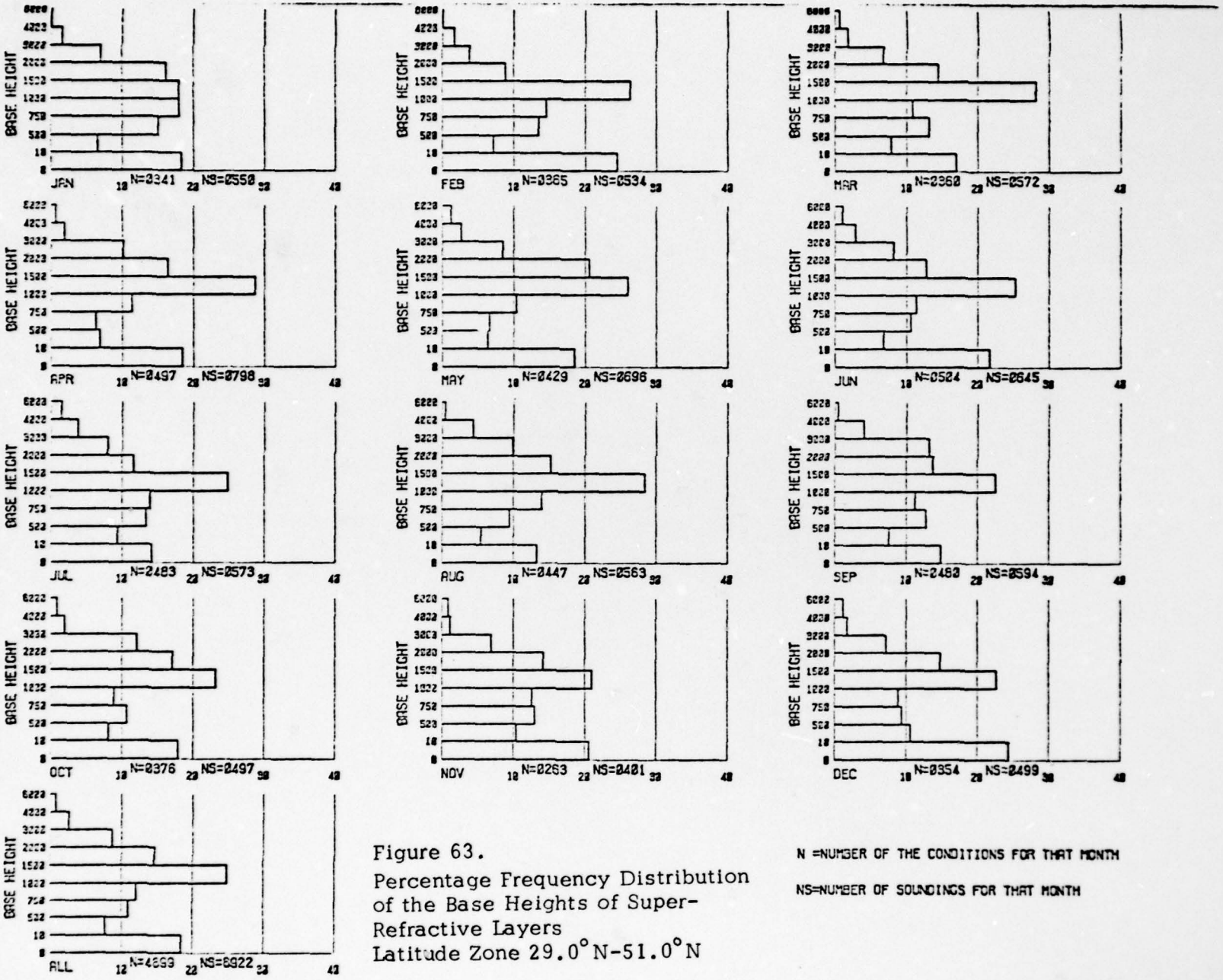


Figure 63.
Percentage Frequency Distribution of the Base Heights of Super-Refractive Layers
Latitude Zone 29.0°N-51.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

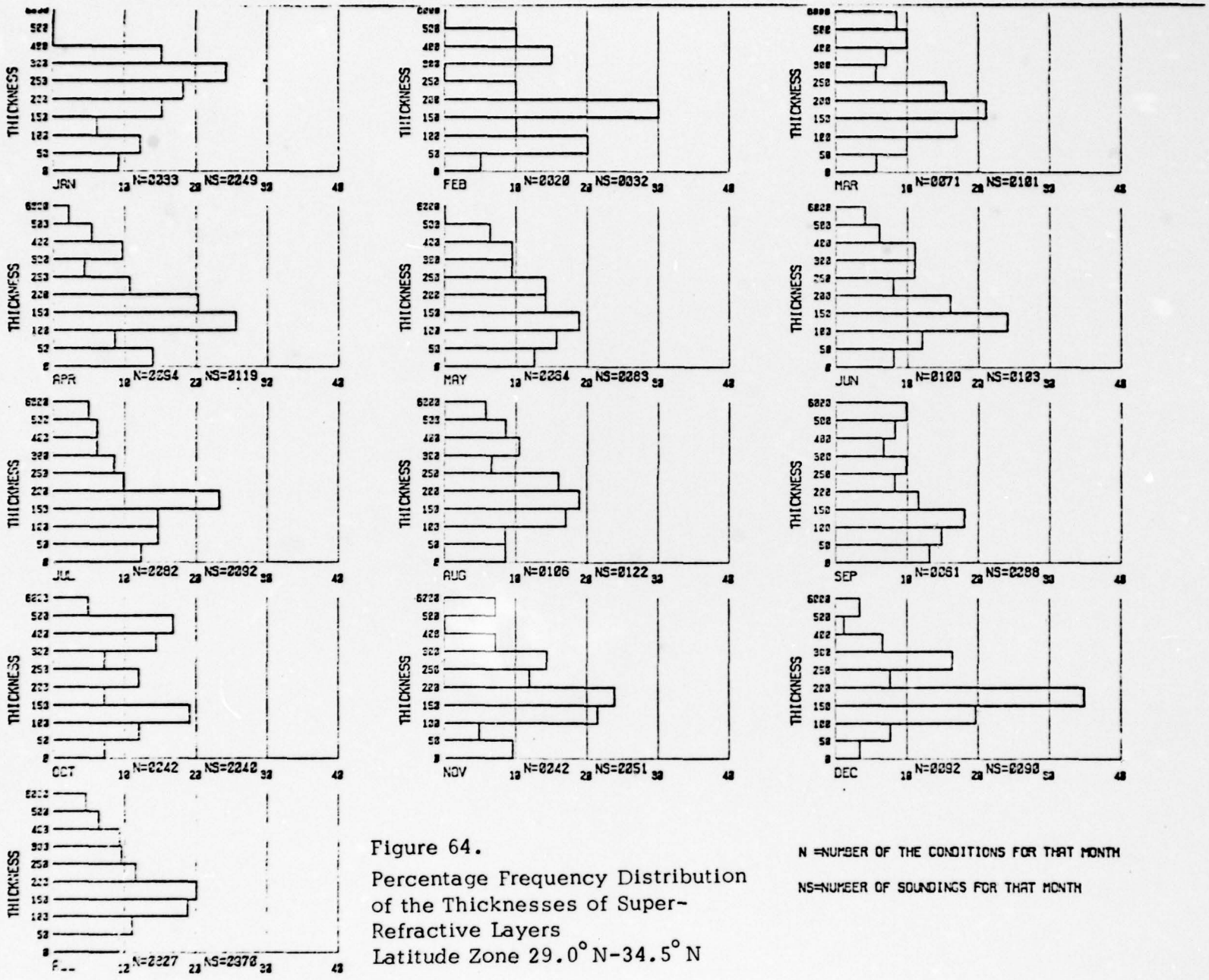


Figure 64.

Percentage Frequency Distribution of the Thicknesses of Super-Refractive Layers Latitude Zone 29.0° N-34.5° N

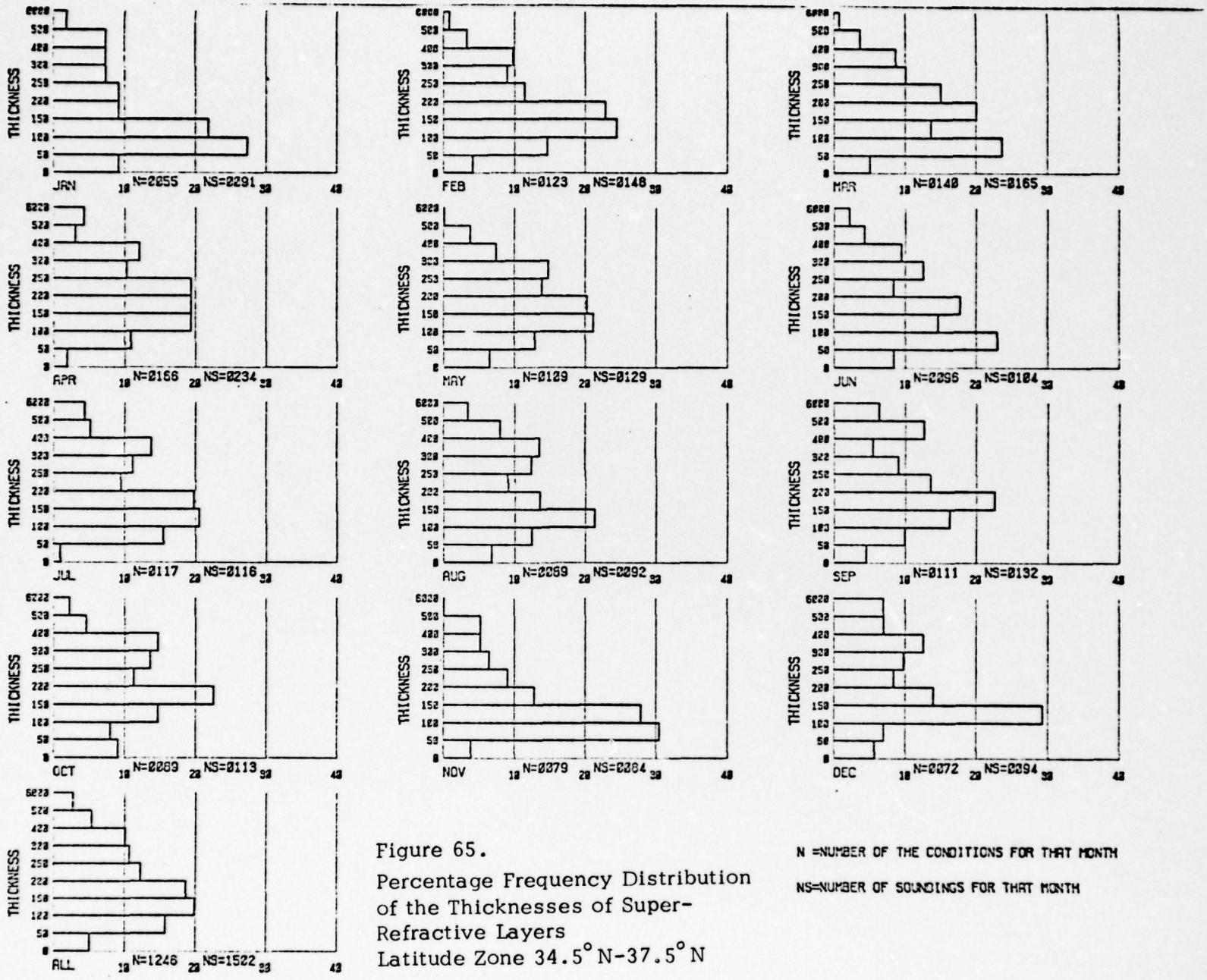


Figure 65.

Percentage Frequency Distribution of the Thicknesses of Super-Refractive Layers
Latitude Zone 34.5°N-37.5°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

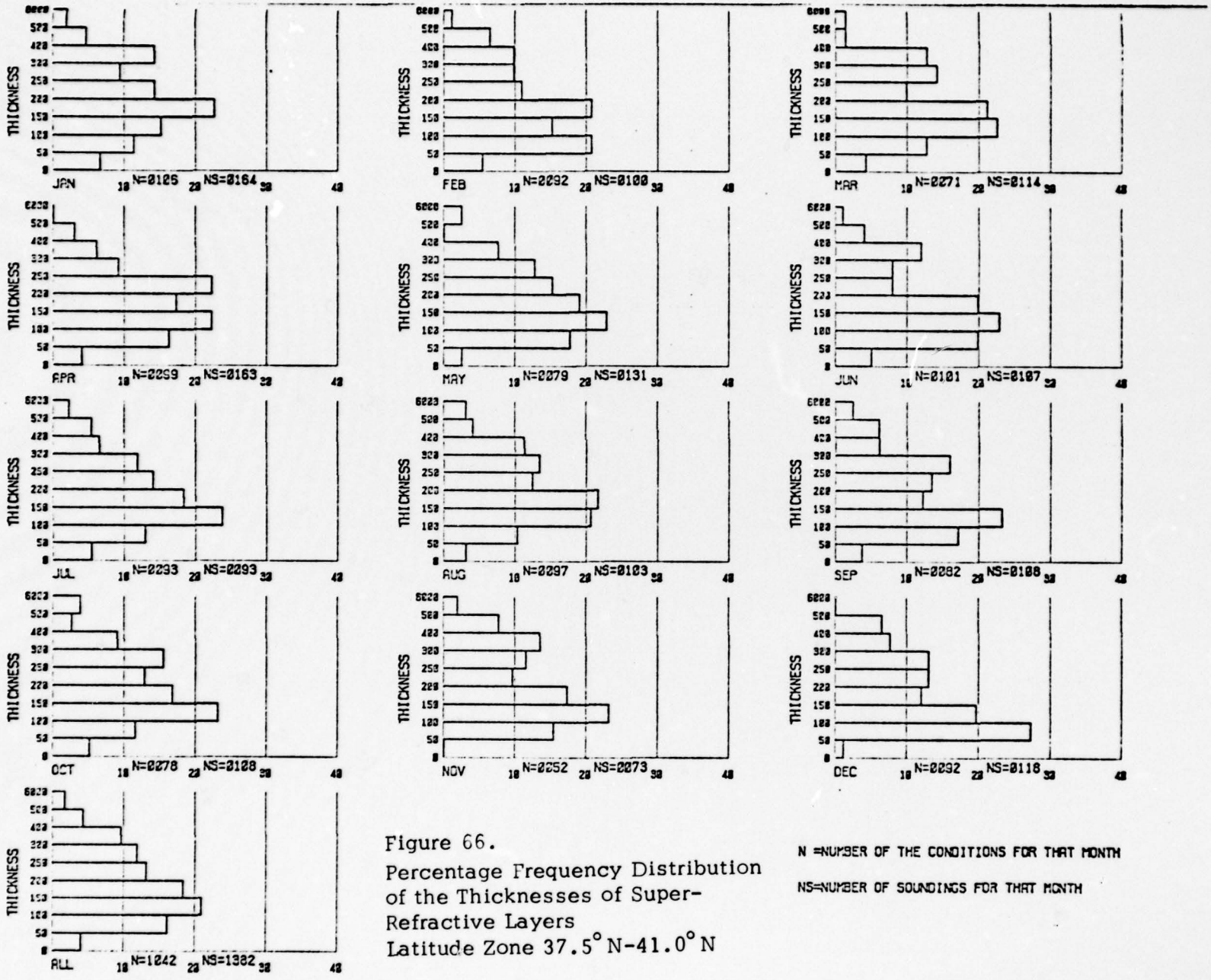


Figure 66.
Percentage Frequency Distribution of the Thicknesses of Super-Refractive Layers
Latitude Zone 37.5° N-41.0° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

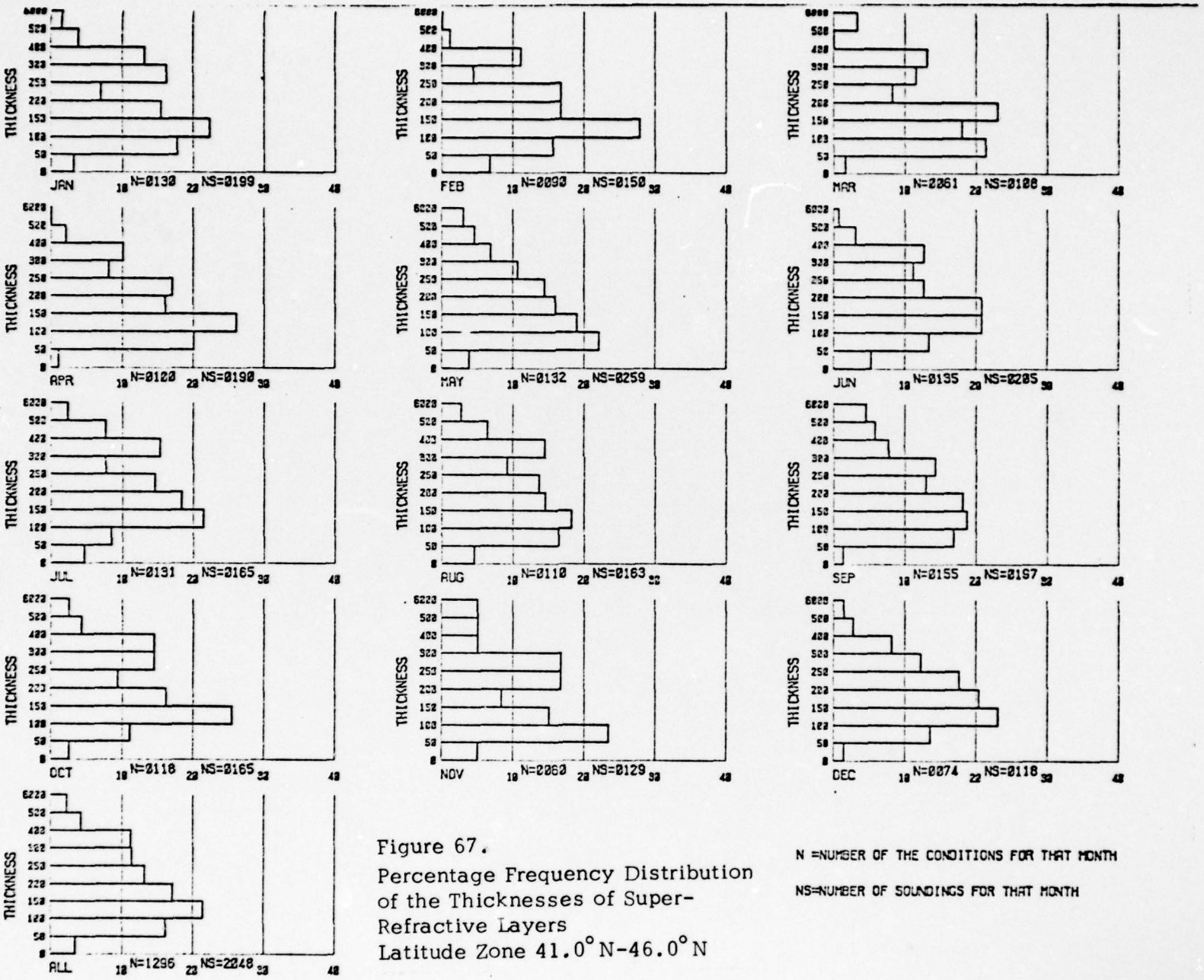


Figure 67.
Percentage Frequency Distribution of the Thicknesses of Super-Refractive Layers
Latitude Zone 41.0°N-46.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

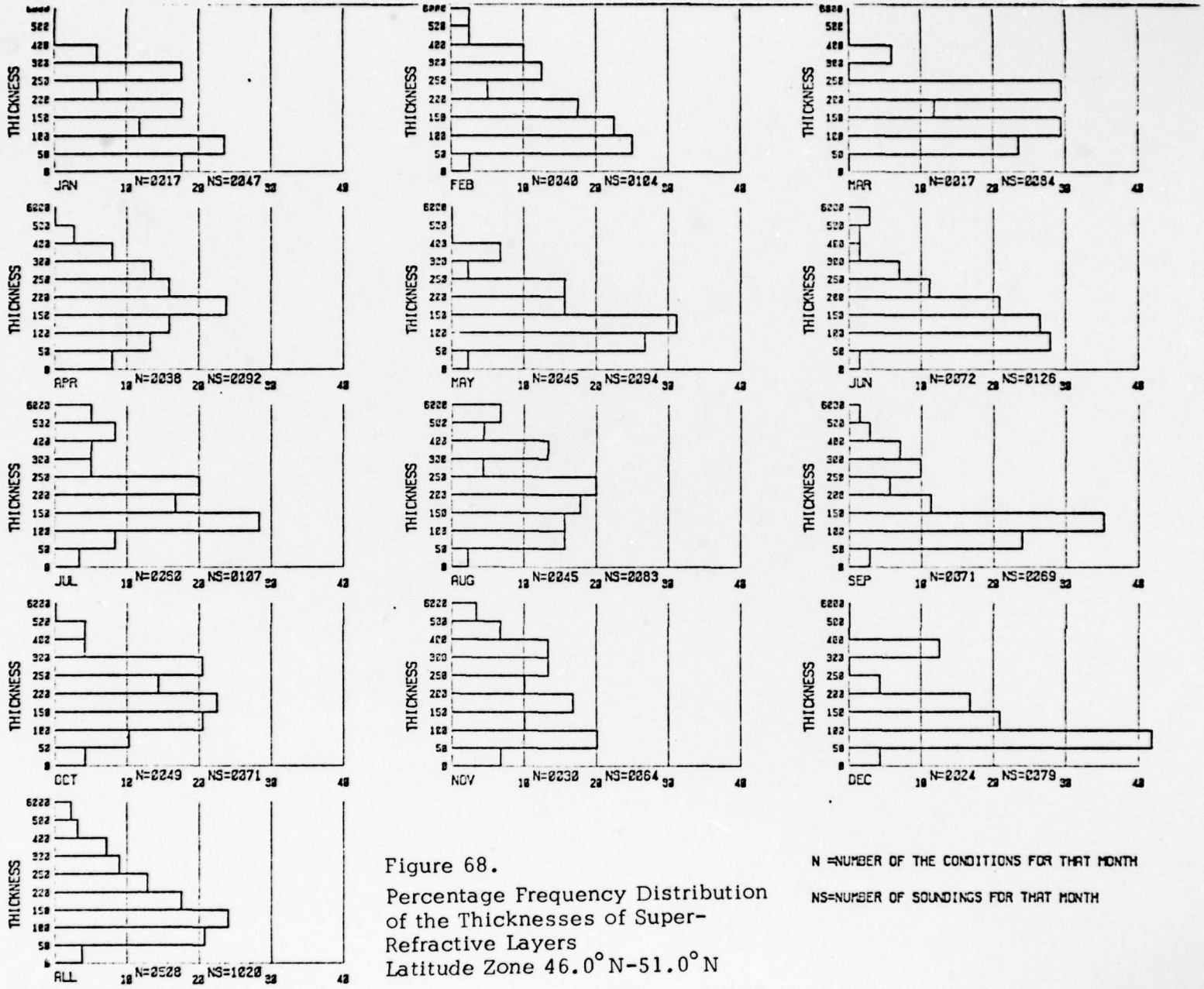


Figure 68.

Percentage Frequency Distribution of the Thicknesses of Super-Refractive Layers
Latitude Zone 46.0°N-51.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

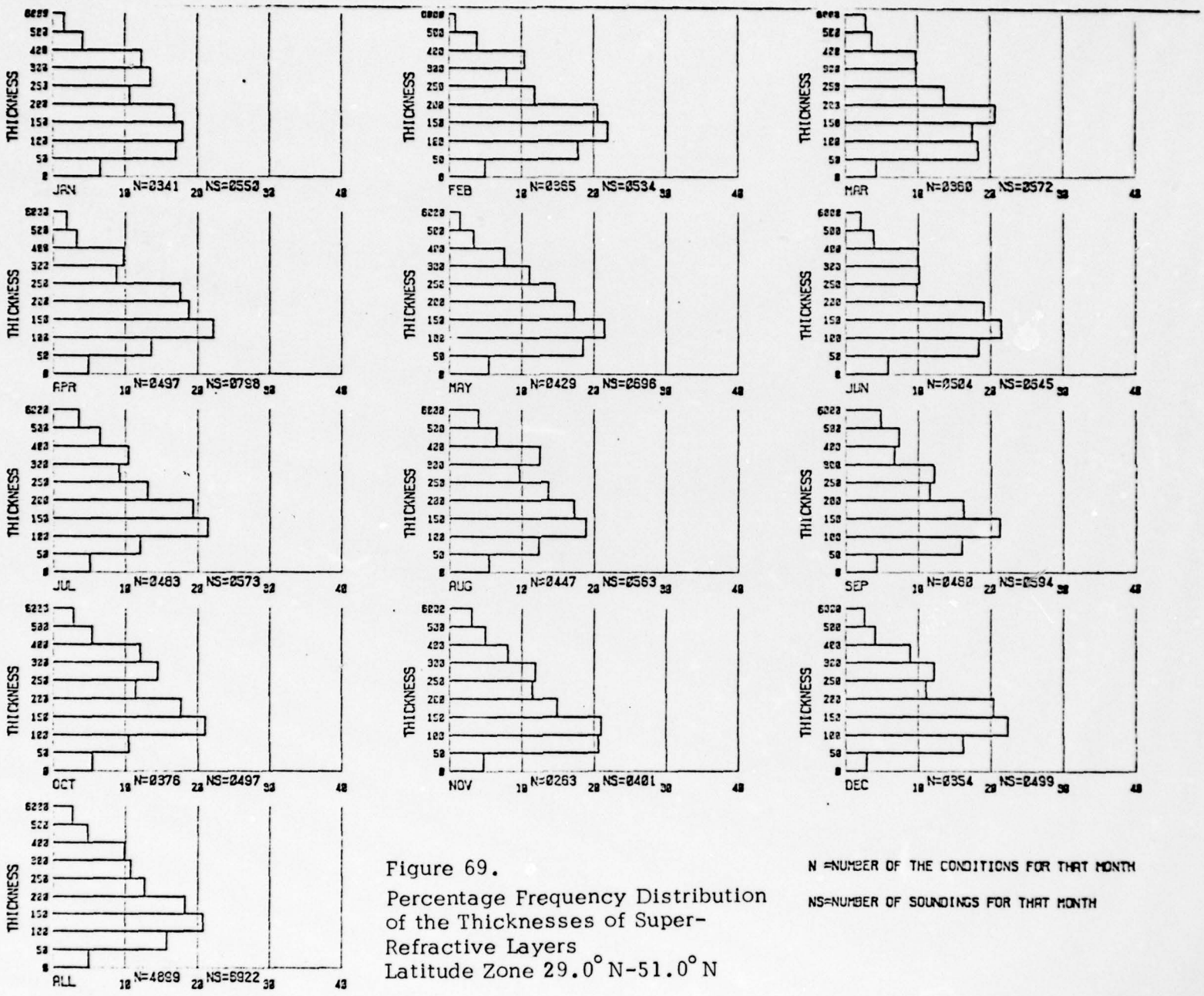


Figure 69.

Percentage Frequency Distribution of the Thicknesses of Super-Refractive Layers
Latitude Zone 29.0° N-51.0° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

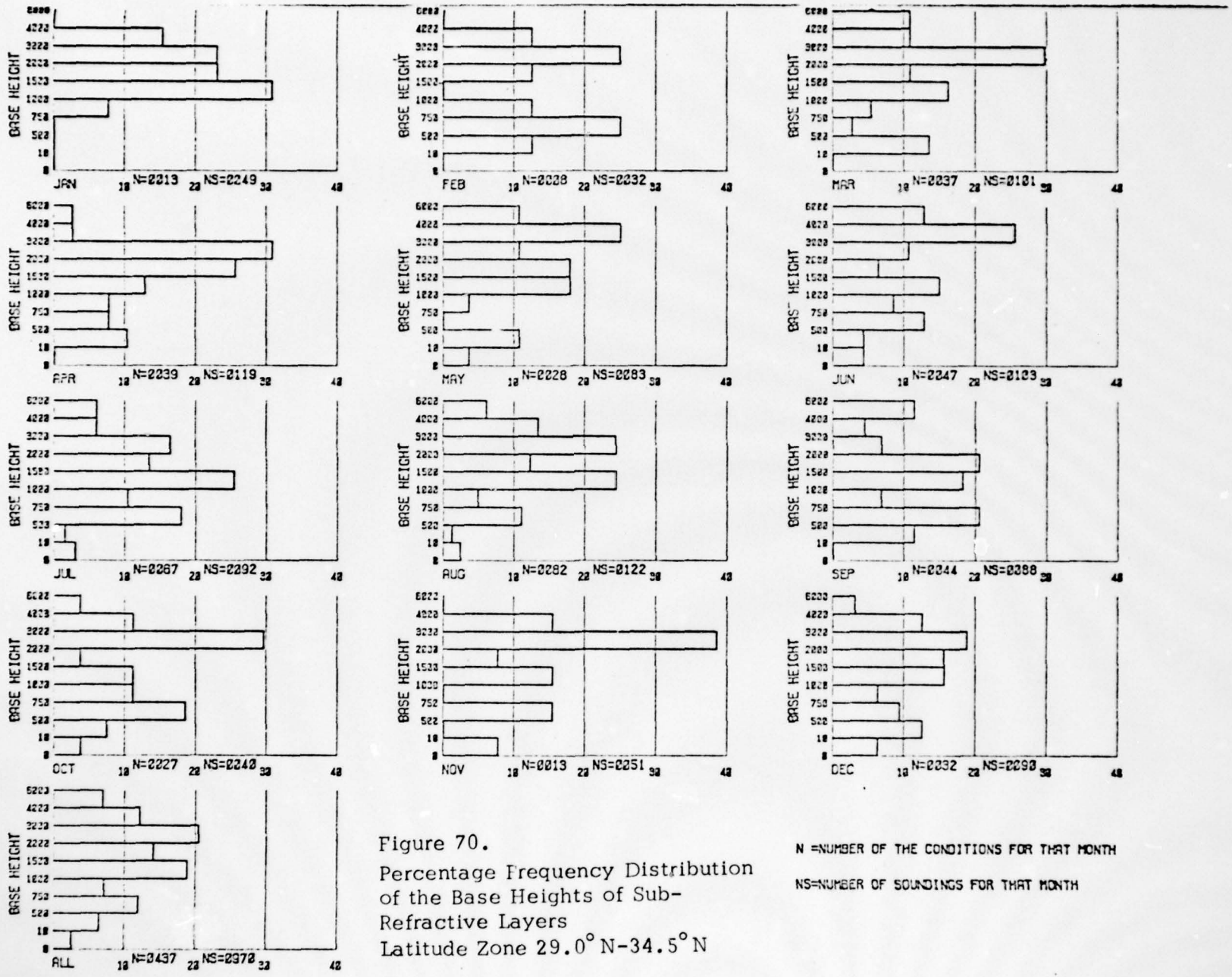


Figure 70.
Percentage Frequency Distribution of the Base Heights of Sub-Refractive Layers
Latitude Zone 29.0° N-34.5° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

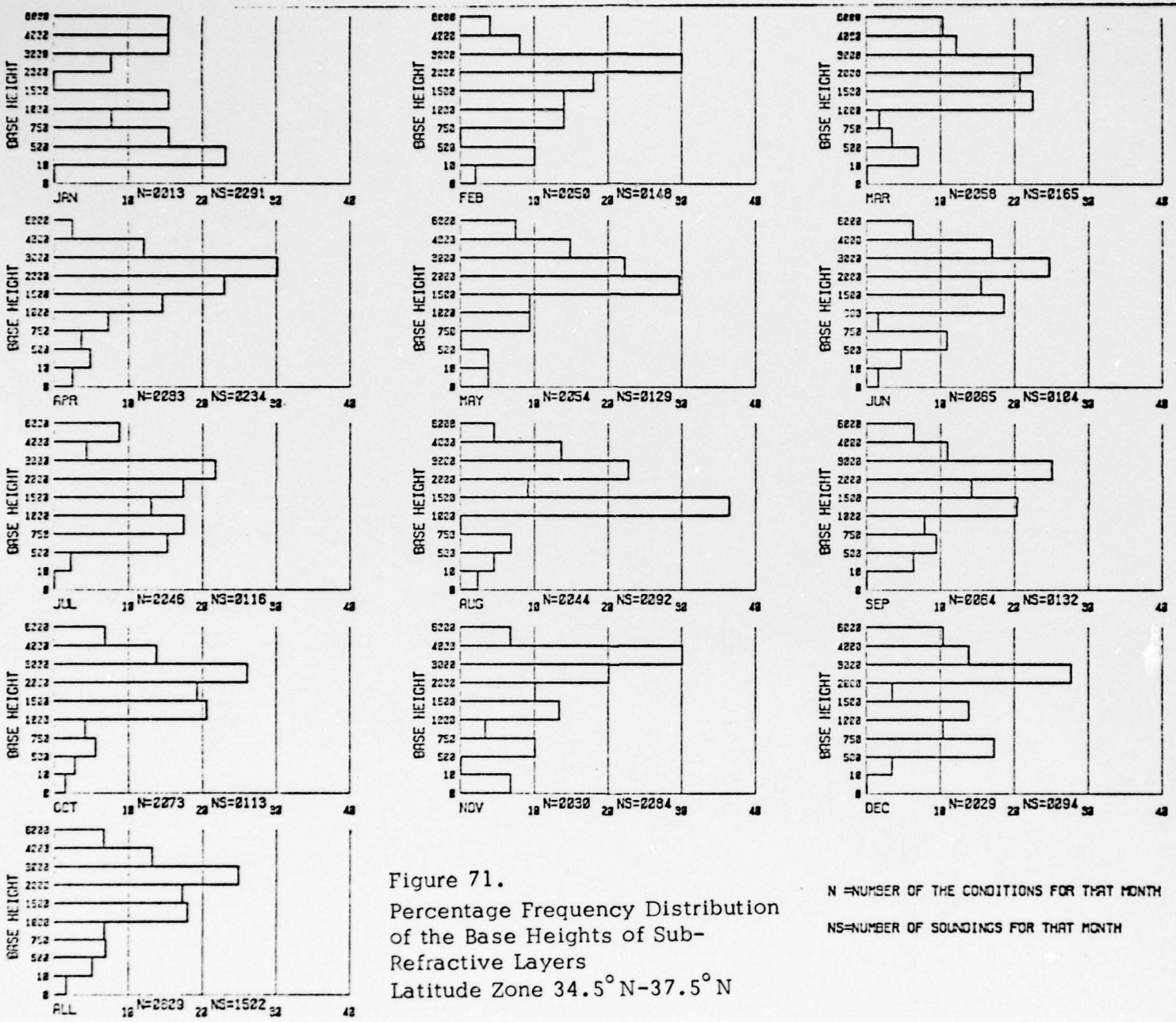


Figure 71.
Percentage Frequency Distribution of the Base Heights of Sub-Refractive Layers
Latitude Zone 34.5°N-37.5°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

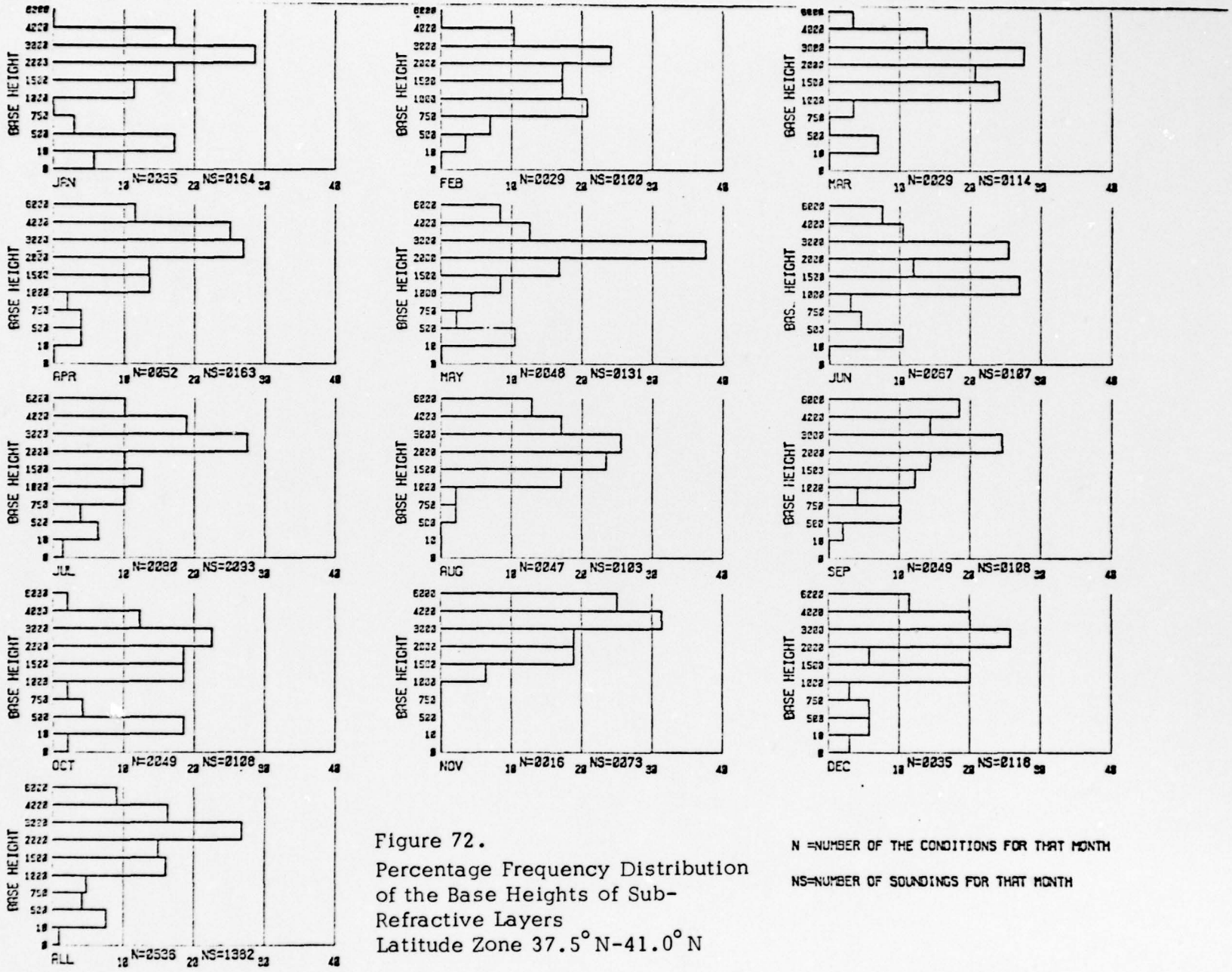


Figure 72.
Percentage Frequency Distribution of the Base Heights of Sub-Refractive Layers
Latitude Zone 37.5°N-41.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

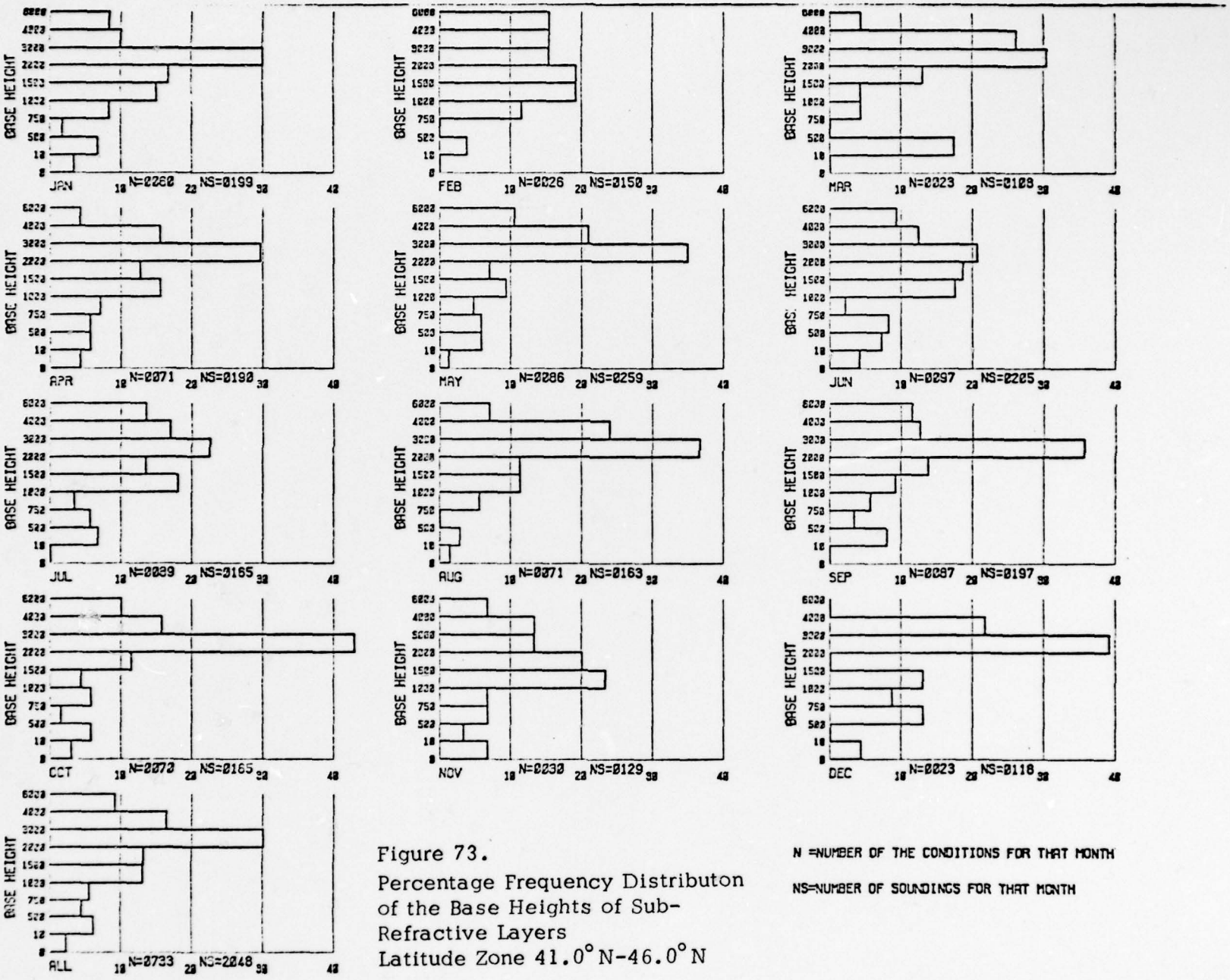


Figure 73.
Percentage Frequency Distributon of the Base Heights of Sub-Refractive Layers
Latitude Zone 41.0°N-46.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

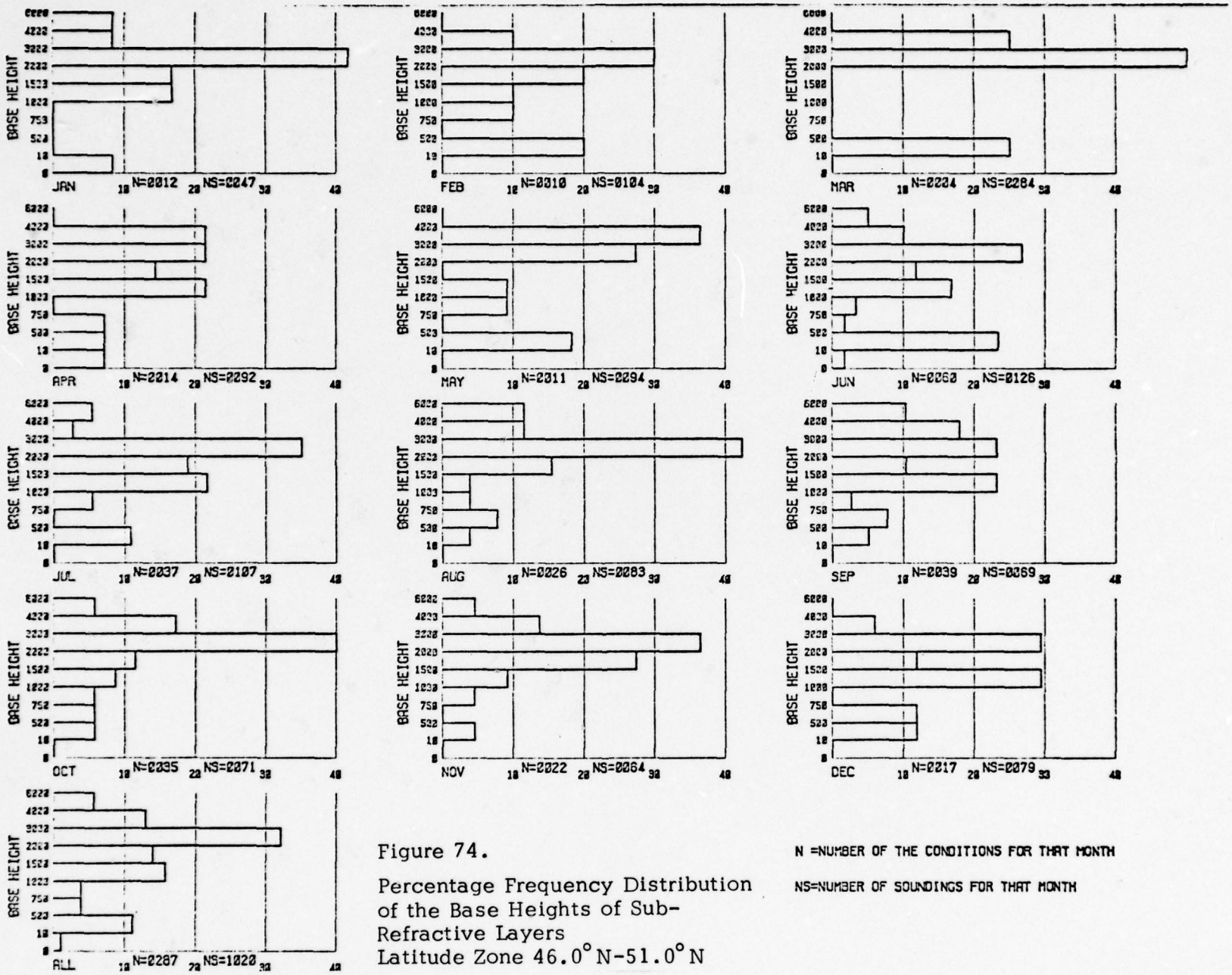


Figure 74.

Percentage Frequency Distribution of the Base Heights of Sub-Refractive Layers
Latitude Zone 46.0°N-51.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

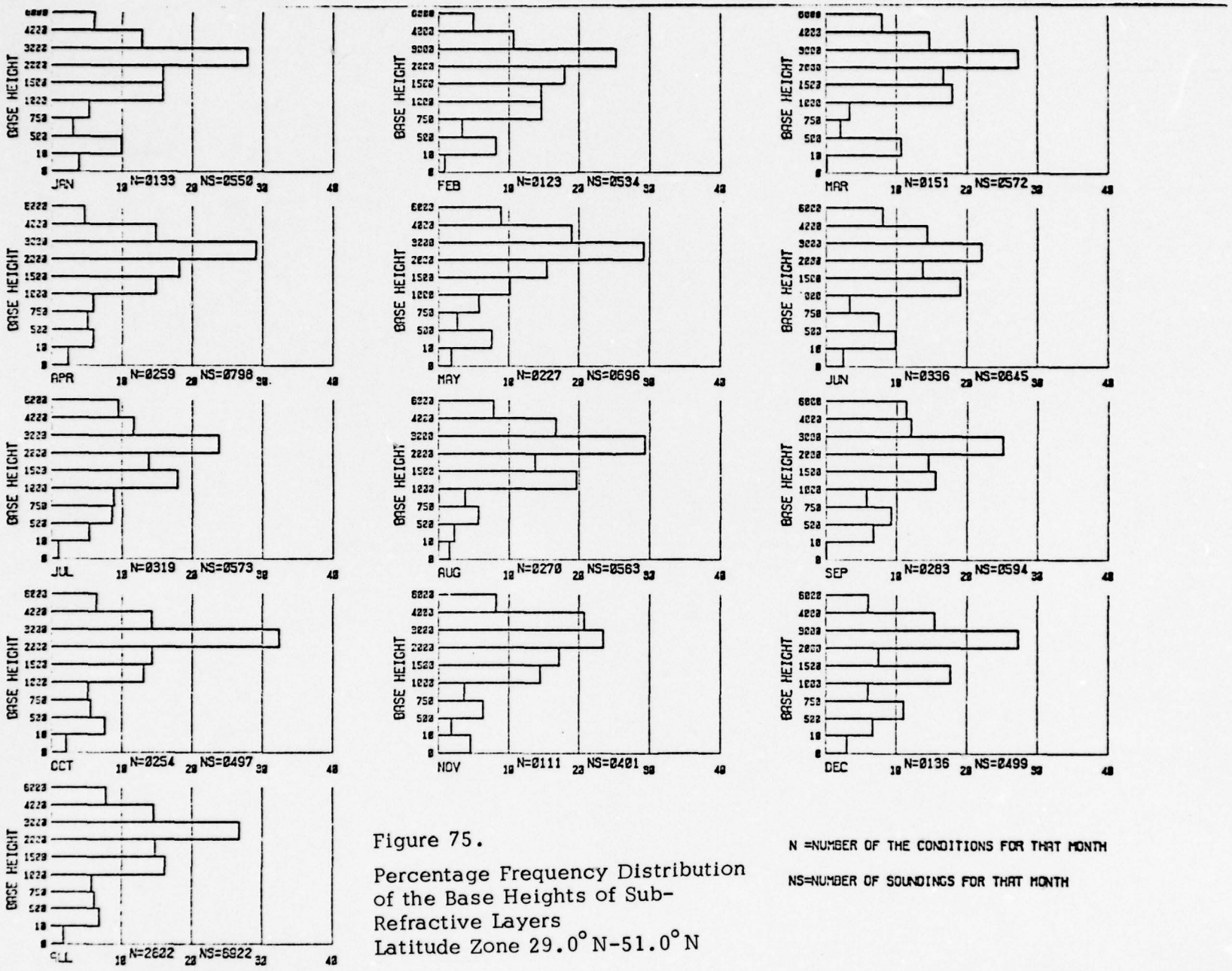


Figure 75.

Percentage Frequency Distribution of the Base Heights of Sub-Refractive Layers
Latitude Zone 29.0°N-51.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

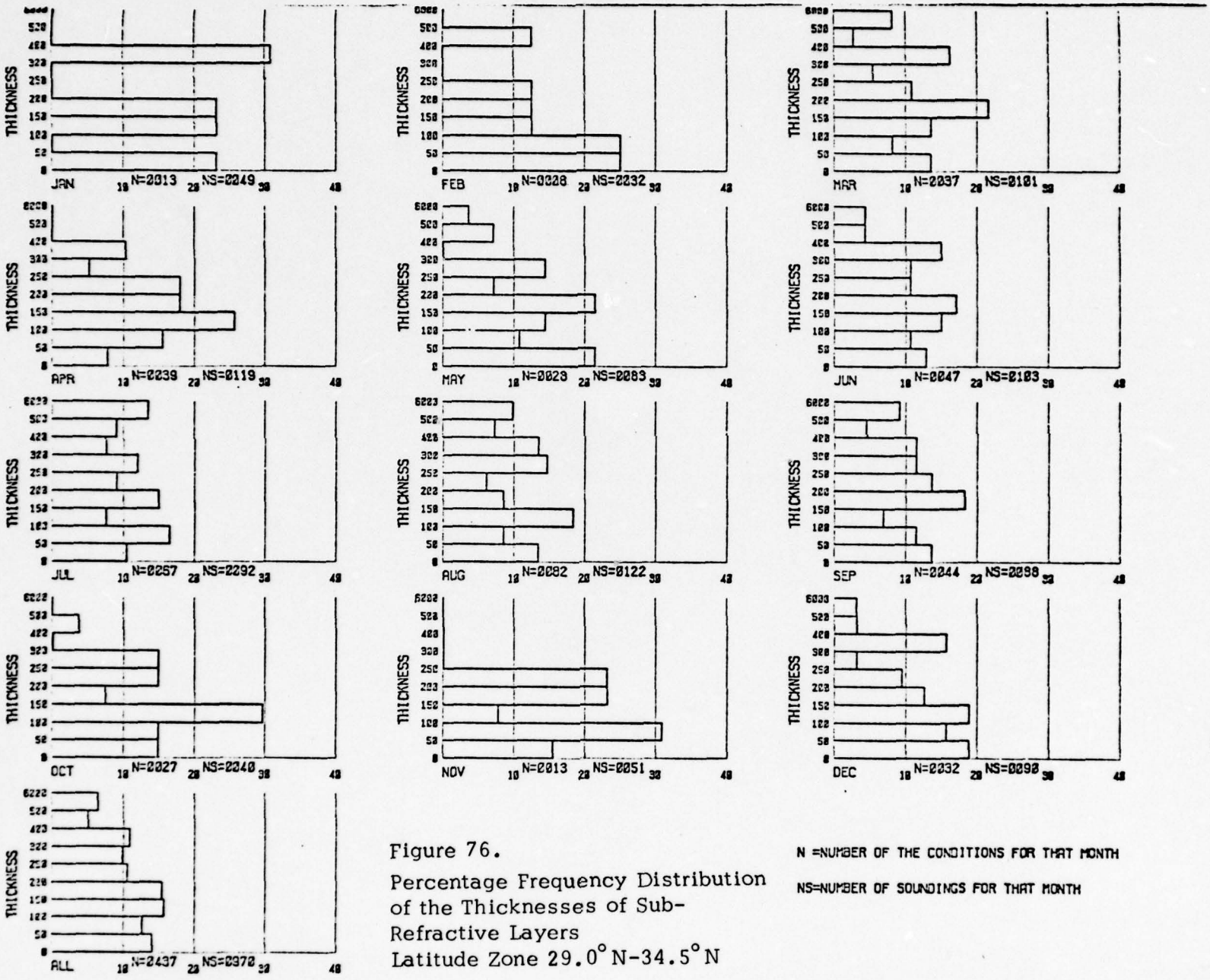


Figure 76.

Percentage Frequency Distribution of the Thicknesses of Sub-Refractive Layers
Latitude Zone 29.0°N-34.5°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

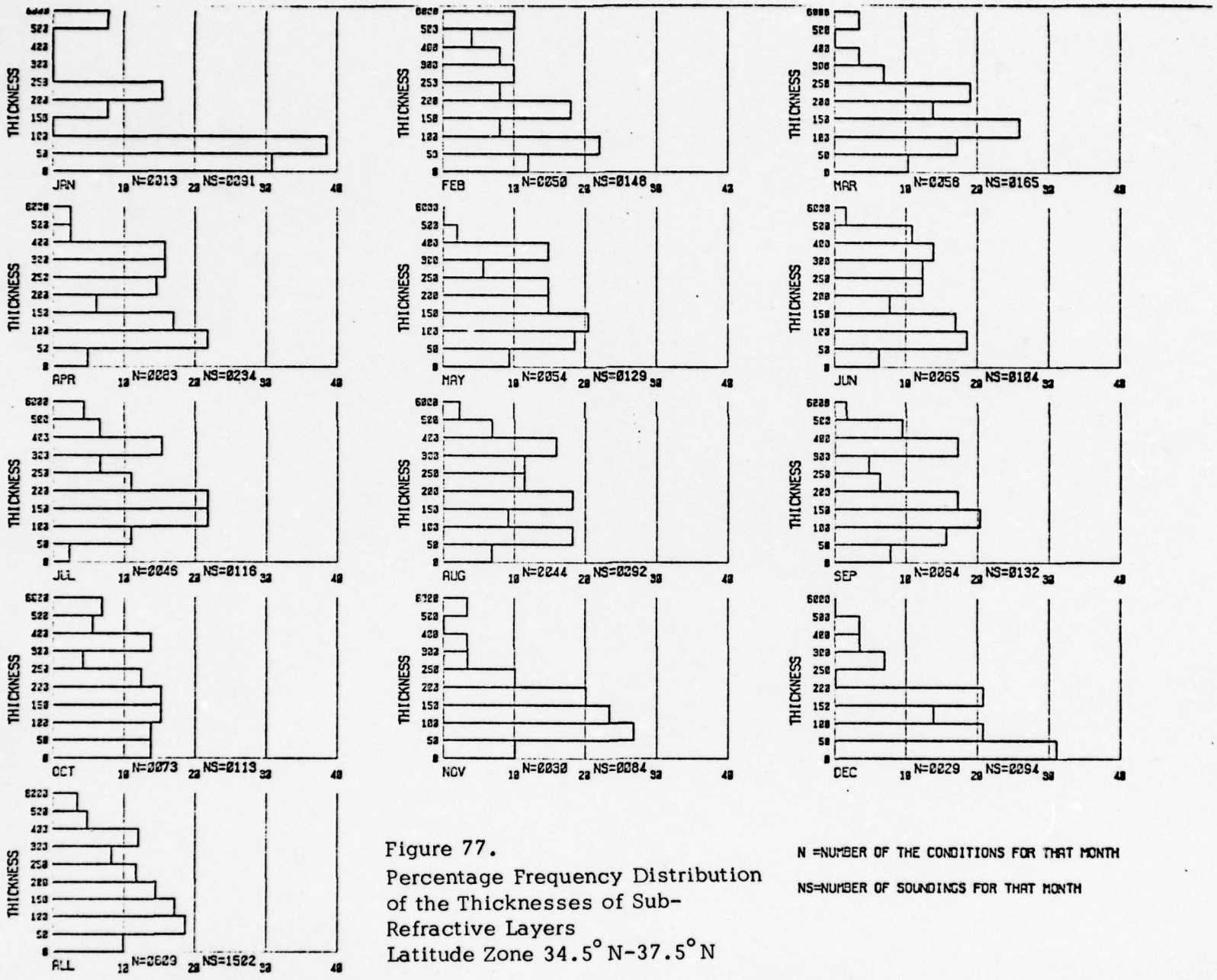


Figure 77.
Percentage Frequency Distribution of the Thicknesses of Sub-Refractive Layers
Latitude Zone 34.5° N-37.5° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

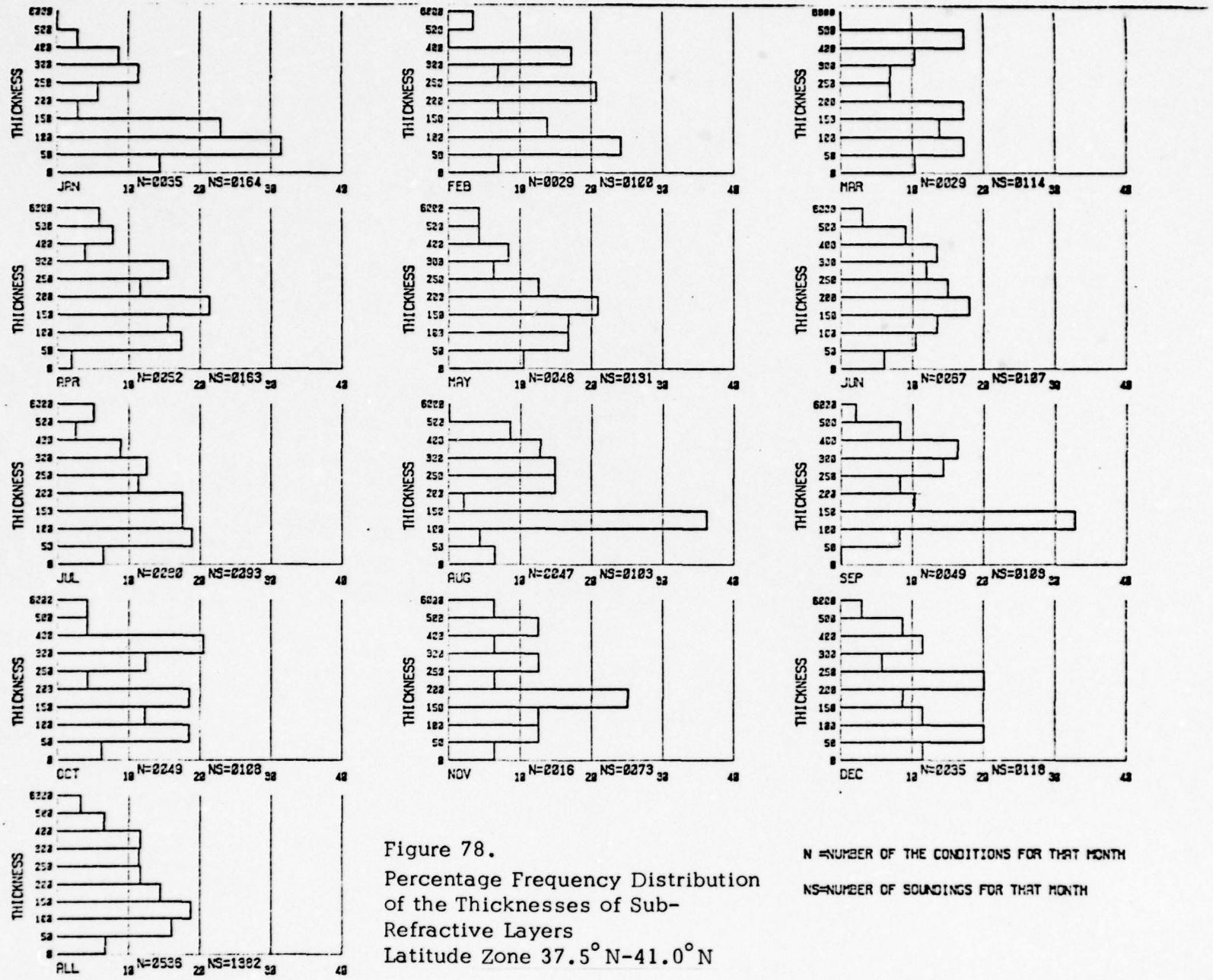


Figure 78.
Percentage Frequency Distribution of the Thicknesses of Sub-Refractive Layers
Latitude Zone 37.5° N-41.0° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

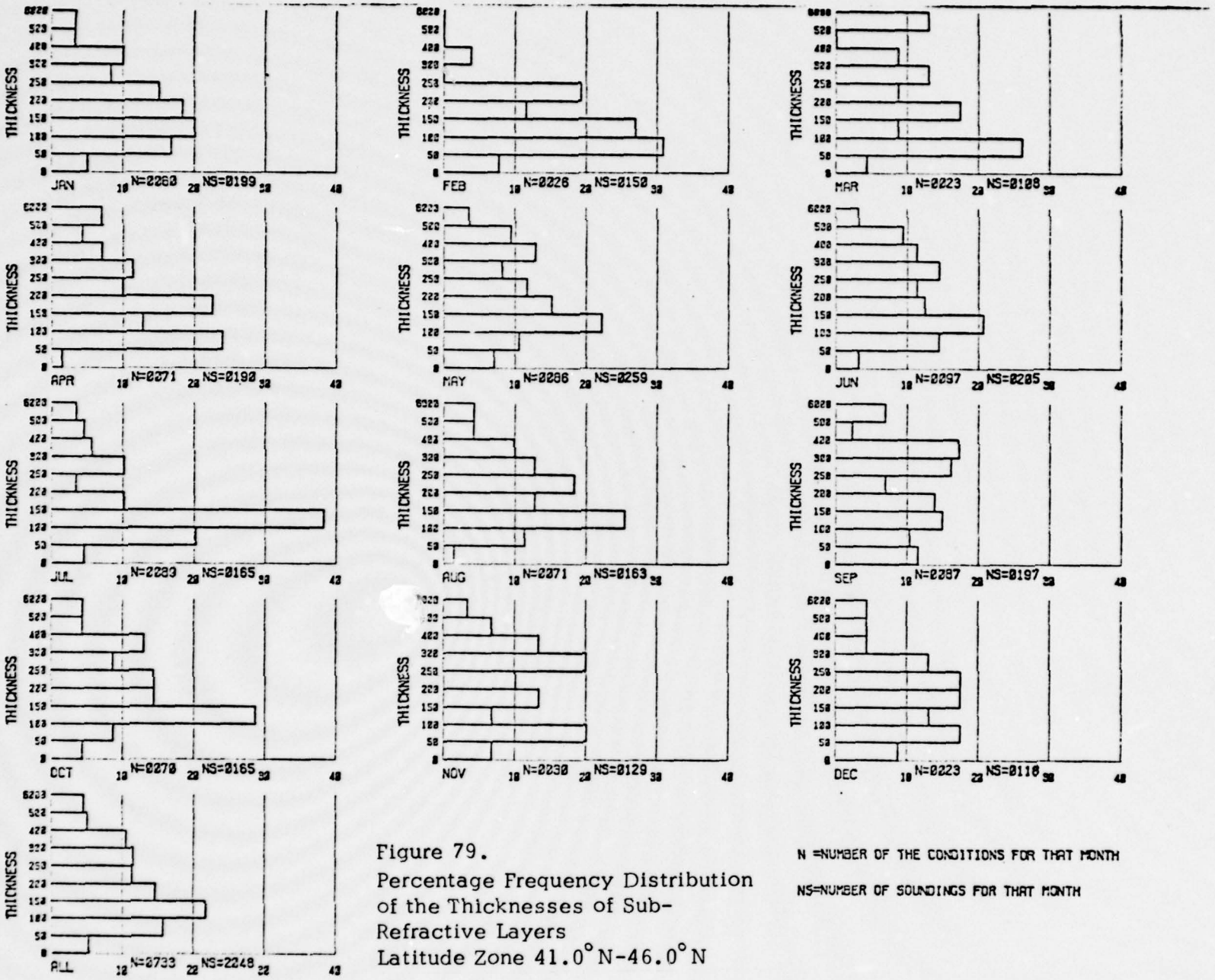


Figure 79.
Percentage Frequency Distribution of the Thicknesses of Sub-Refractive Layers
Latitude Zone 41.0°N-46.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

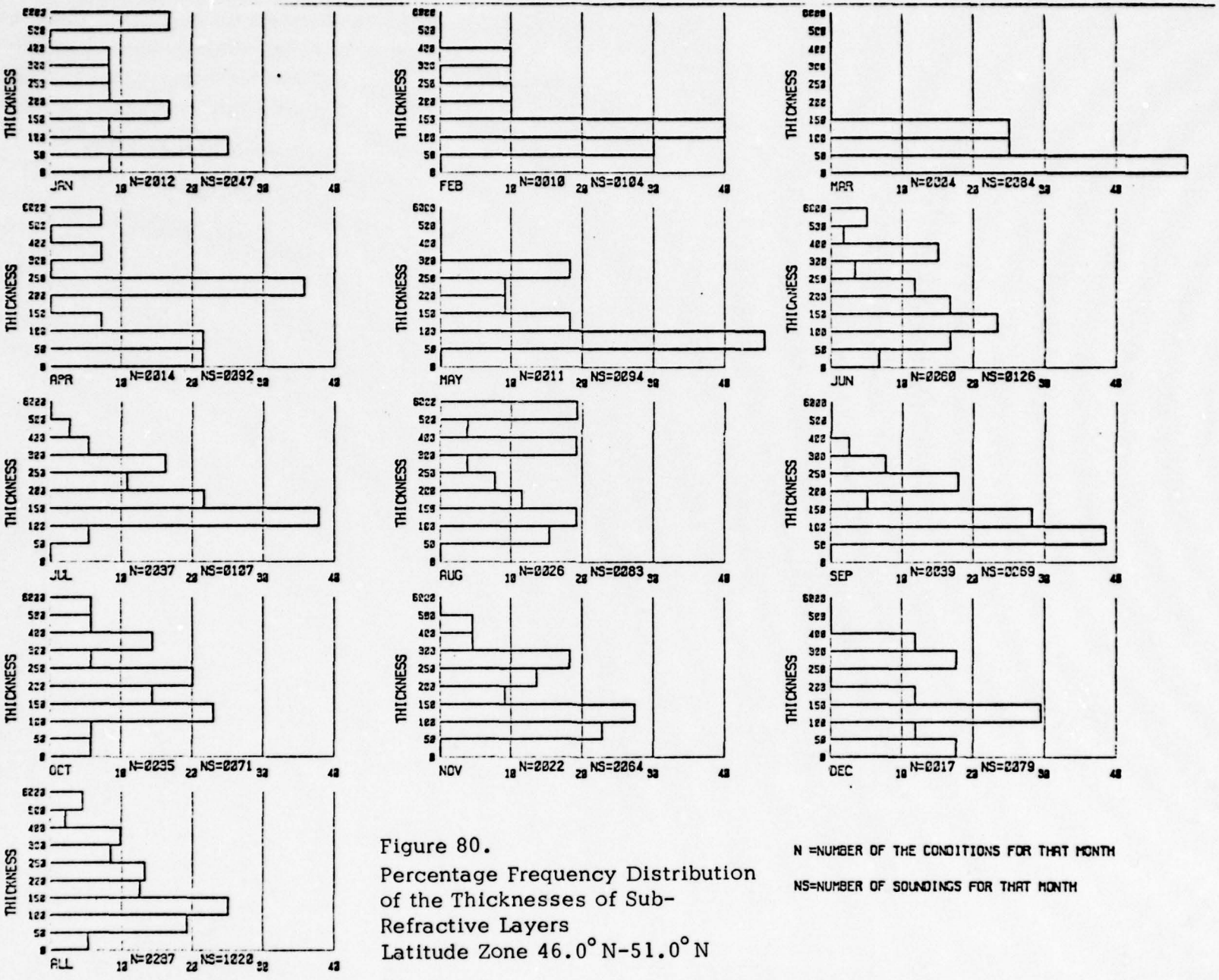


Figure 80.
Percentage Frequency Distribution of the Thicknesses of Sub-Refractive Layers
Latitude Zone 46.0°N-51.0°N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

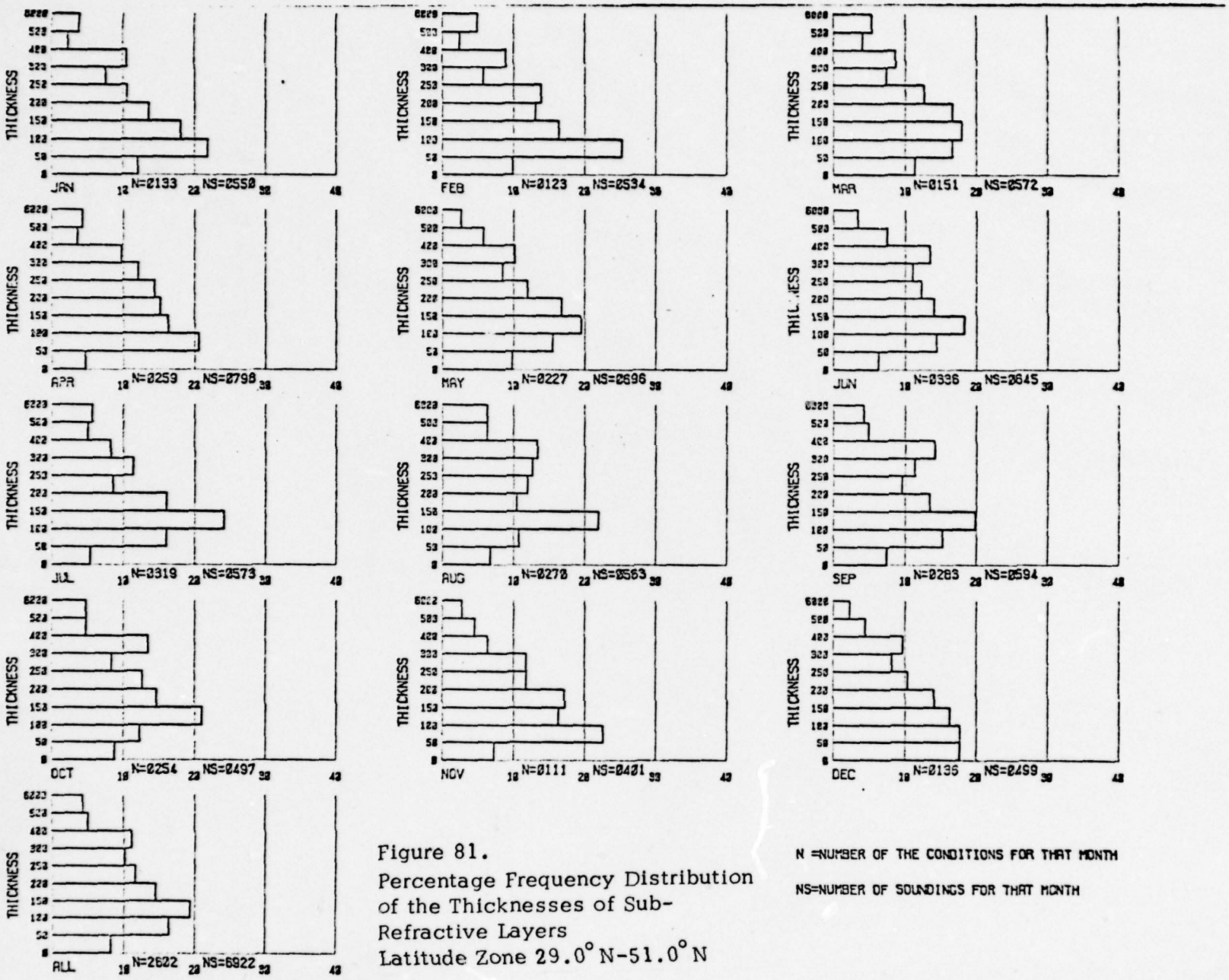


Figure 81.
Percentage Frequency Distribution of the Thicknesses of Sub-Refractive Layers
Latitude Zone 29.0° N-51.0° N

N =NUMBER OF THE CONDITIONS FOR THAT MONTH

NS=NUMBER OF SOUNDINGS FOR THAT MONTH

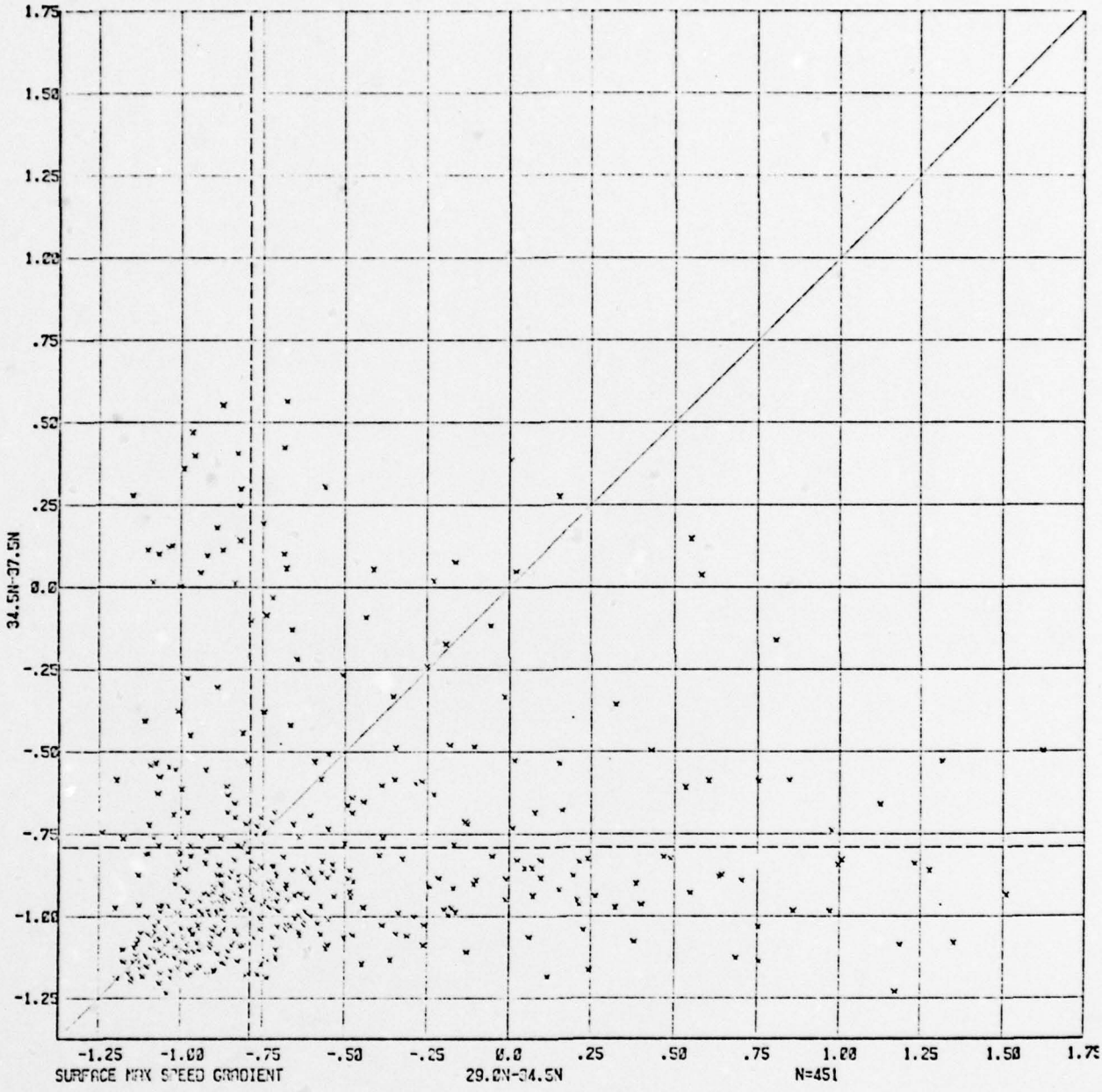


Figure 82. Scattergram Comparing the Distributions of Parameter S in Two Adjacent Latitude Zones for Simultaneously-Occurring Pairs of Profiles

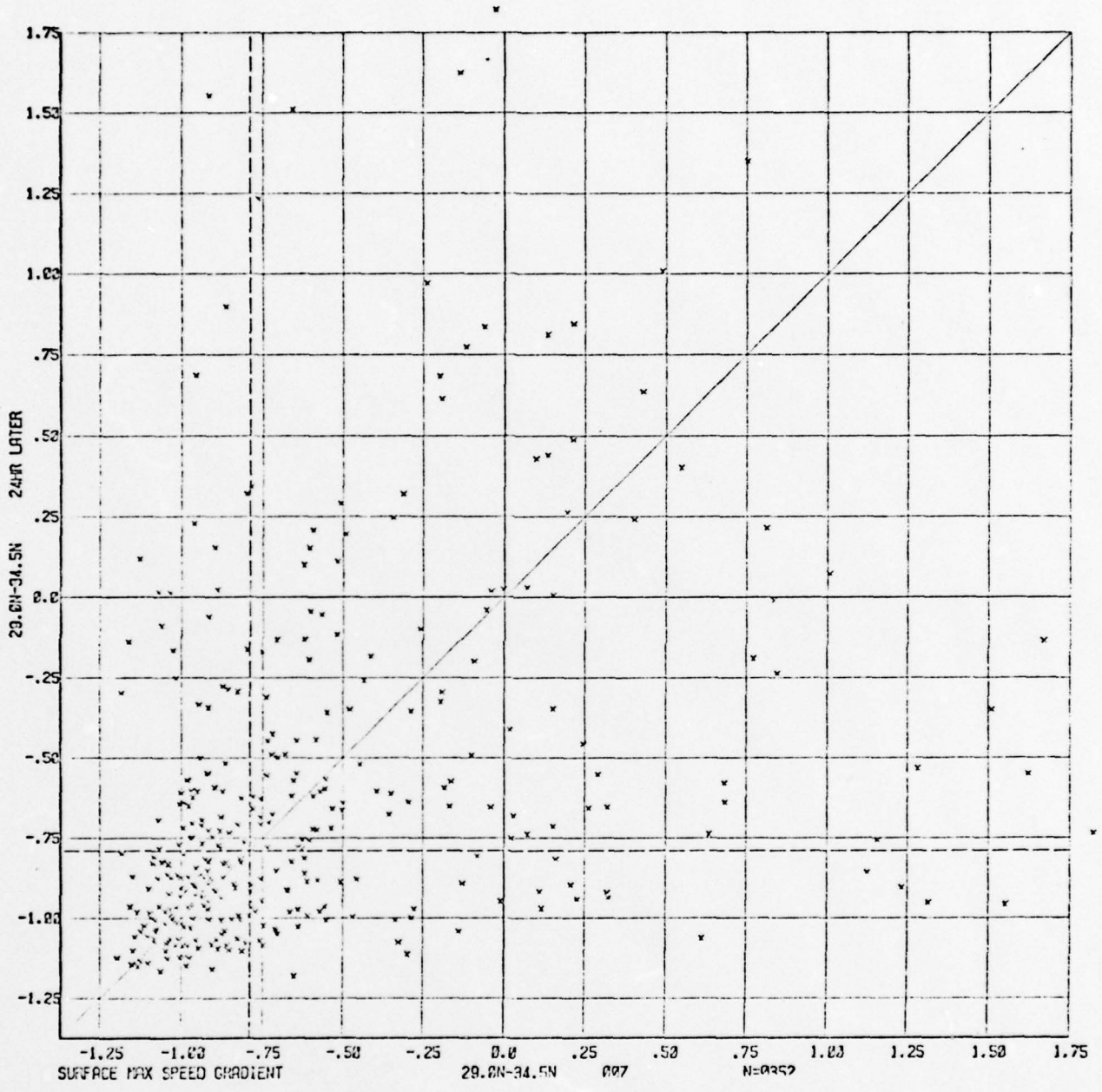


Figure 83. Scattergram Showing the Distribution of Parameter S after 24 Hours Based on 00Z Observations

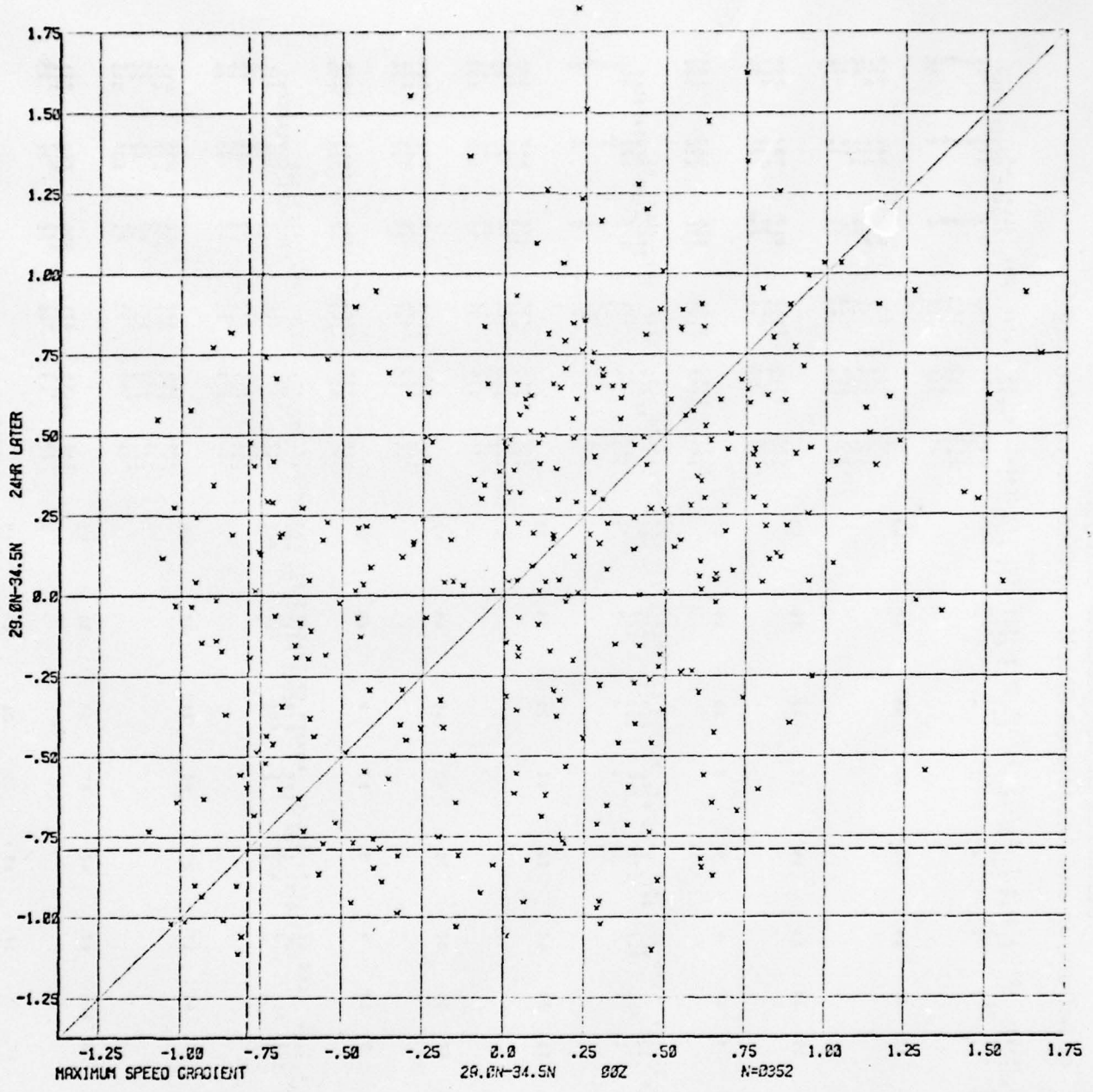


Figure 84. Scattergram Showing the Distribution of Parameter D after 24 Hours Based on 00Z Observations

Table 7

Statistics of the Discrete Categories of Refraction and Associated Specifying Parameters: January

JANUARY LAT 29.0N TO 34.0N, LONG 121.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 24, 12Z= 25, ALL= 49

	NUMBERS			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	1	1	2	1	1	2	4	4	4	0	0	0	0	0	0
DUCT THICKNESS										167	169	166	0	0	3
TRAP THICKNESS										167	169	166	0	0	3
TRAP INTENSITY										20	211	215	0	0	96
NON-SFC DUCTS	14	12	26	14	10	24	58	40	48						
HEIGHT BASE DUCT										591	828	709	431	566	512
HEIGHT BASE TRAP										741	969	855	421	515	494
DUCT THICKNESS										256	227	239	56	106	86
TRAP THICKNESS										165	119	139	54	65	60
TRAP INTENSITY										115	104	110	71	78	75
SUPER REFRACTIVE	14	19	33	11	14	25	45	56	51						
HEIGHT BASE										973	1302	1162	817	752	799
THICKNESS										212	205	208	99	111	107
INTENSITY										45	52	49	24	23	24
SUB REFRACTIVE	5	8	13	4	4	8	16	16	16						
HEIGHT BASE										2171	1640	1844	624	662	659
THICKNESS										197	167	177	130	114	121

JANUARY LAT 34.0N TO 37.0N, LONG 121.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 48, 12Z= 43, ALL= 91

	NUMBERS			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	0	1	1	0	1	1	0	2	1	0	0	0	0	0	0
DUCT THICKNESS										0	56	56	0	0	0
TRAP THICKNESS										0	56	56	0	0	0
TRAP INTENSITY										0	31	31	0	0	0
NON-SFC DUCTS	11	11	22	10	10	20	20	23	21						
HEIGHT BASE DUCT										782	815	799	396	647	536
HEIGHT BASE TRAP										896	907	901	356	610	500
DUCT THICKNESS										211	196	194	76	89	89
TRAP THICKNESS										66	95	81	35	46	43
TRAP INTENSITY										85	105	95	95	110	103
SUPER REFRACTIVE	28	27	55	22	21	43	45	48	47						
HEIGHT BASE										1004	1014	1111	649	792	729
THICKNESS										183	184	174	122	120	121
INTENSITY										40	47	46	25	18	24
SUB REFRACTIVE	4	9	13	4	9	13	8	20	14						
HEIGHT BASE										775	2333	1854	354	1644	1557
THICKNESS										41	185	141	17	218	194

JANUARY LAT 37.5N TO 41.5N, LONG 121.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 80, 12Z= 84, ALL= 164

	NUMBERS			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	4	2	6	4	2	6	5	2	3	30	12	21	55	0	48
DUCT THICKNESS										157	124	147	99	38	85
TRAP THICKNESS										125	127	126	78	39	67
TRAP INTENSITY										54	105	71	45	82	64
NON-SFC DUCTS	17	23	40	17	23	40	21	27	24						
HEIGHT BASE DUCT										859	896	880	256	498	414
HEIGHT BASE TRAP										933	958	946	238	487	401
DUCT THICKNESS										187	171	177	68	71	72
TRAP THICKNESS										115	148	133	52	55	53
TRAP INTENSITY										66	77	73	51	137	111
SUPER REFRACTIVE	53	53	106	43	42	85	53	50	51						
HEIGHT BASE										586	1055	821	591	761	721
THICKNESS										214	205	209	111	119	115
INTENSITY										43	48	45	21	21	22
SUB REFRACTIVE	18	17	35	17	15	32	21	17	19						
HEIGHT BASE										1864	1767	1331	981	1293	1144
THICKNESS										173	112	143	179	86	102

JANUARY LAT 41.2N TO 46.2N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 110, 12Z= 91, ALL= 199

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	1	1	2	1	1	2	0	1	1	[illegible]	[illegible]	79	0	0	79
DUCT THICKNESS										[illegible]	[illegible]	86	0	0	86
TRAP THICKNESS										[illegible]	116	110	0	0	12
TRAP INTENSITY										15	279	147	0	0	132
NON-SFC DUCTS	17	17	34	17	16	33	15	17	16						
HEIGHT BASE DUCT										748	751	750	434	577	510
HEIGHT BASE TRAP										810	845	827	402	534	472
DUCT THICKNESS										156	198	177	97	75	74
TRAP THICKNESS										97	104	99	32	34	32
TRAP INTENSITY										85	106	80	55	111	92
SUPER REFRACTIVE	82	48	130	65	43	108	60	47	54						
HEIGHT BASE										999	1081	1029	763	634	720
THICKNESS										210	187	202	129	93	117
INTENSITY										51	50	51	21	21	20
SUB REFRACTIVE	31	29	60	23	25	48	21	27	24						
HEIGHT BASE										2352	1599	2009	1317	839	1180
THICKNESS										185	212	198	125	125	126

JANUARY LAT 46.2N TO 51.2N, LONG 126.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 28, 12Z= 19, ALL= 47

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DUCT THICKNESS										0	0	0	0	0	0
TRAP THICKNESS										0	0	0	0	0	0
TRAP INTENSITY										0	0	0	0	0	0
NON-SFC DUCTS	2	1	3	2	1	3	7	5	6						
HEIGHT BASE DUCT										2110	1176	1806	694	0	713
HEIGHT BASE TRAP										2140	1195	1830	701	0	722
DUCT THICKNESS										68	61	75	10	0	22
TRAP THICKNESS										56	42	53	34	0	30
TRAP INTENSITY										165	42	117	148	0	132
SUPER REFRACTIVE	9	8	17	8	6	14	28	31	29						
HEIGHT BASE										941	1245	1084	855	799	843
THICKNESS										157	140	149	117	81	102
INTENSITY										52	41	46	20	22	23
SUB REFRACTIVE	7	5	12	7	4	11	25	21	23						
HEIGHT BASE										2788	1559	2293	1117	892	1184
THICKNESS										249	238	221	151	170	160

JANUARY LAT 29.2N TO 51.2N, LONG 126.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 298, 12Z= 262, ALL= 550

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	5	6	11	6	5	11	2	1	2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DUCT THICKNESS										[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TRAP THICKNESS										[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TRAP INTENSITY										[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
NON-SFC DUCTS	61	64	125	60	60	120	20	22	21						
HEIGHT BASE DUCT										[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
HEIGHT BASE TRAP										[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DUCT THICKNESS										[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TRAP THICKNESS										[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
TRAP INTENSITY										[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SUPER REFRACTIVE	136	155	341	149	126	275	51	48	50						
HEIGHT BASE										[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
THICKNESS										[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
INTENSITY										[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SUB REFRACTIVE	65	68	133	55	57	112	19	21	20						
HEIGHT BASE										[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
THICKNESS										[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 8

Statistics of the Discrete Categories of Refraction and Associated Specifying Parameters: February

FEBRUARY LAT 29.0N TO 34.5N, LONG 103.0W TO 146.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 19, 12Z= 13, ALL= 32

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	1	3	4	1	0	1	5	0	3	162	0	162	0	0	0
DUCT THICKNESS										317	0	317	0	0	0
TRAP THICKNESS										125	0	125	0	0	0
TRAP INTENSITY										163	0	163	0	0	0
NON-SFC DUCTS	14	8	22	12	7	19	63	53	59						
HEIGHT BASE DUCT										860	865	875	842	675	785
HEIGHT BASE TRAP										966	982	971	828	641	766
DUCT THICKNESS										203	205	203	55	81	74
TRAP THICKNESS										117	90	107	45	54	51
TRAP INTENSITY										83	223	134	50	268	179
SUPER REFRACTIVE	14	6	20	12	6	18	63	45	56						
HEIGHT BASE										781	1652	1042	726	1151	962
THICKNESS										196	215	201	104	149	121
INTENSITY										54	44	51	24	16	22
SUB REFRACTIVE	6	2	8	4	2	6	21	15	18						
HEIGHT BASE										1233	2495	1548	1314	92	1035
THICKNESS										101	273	144	87	129	124

FEBRUARY LAT 34.5N TO 37.5N, LONG 12.0W TO 146.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 87, 12Z= 61, ALL= 148

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	6	0	6	6	0	6	6	0	4	0	0	0	0	0	0
DUCT THICKNESS										69	0	86	41	0	41
TRAP THICKNESS										69	0	86	41	0	41
TRAP INTENSITY										41	0	41	41	0	41
NON-SFC DUCTS	30	31	61	29	29	58	33	47	39						
HEIGHT BASE DUCT										615	519	868	597	606	604
HEIGHT BASE TRAP										860	995	943	591	607	602
DUCT THICKNESS										203	207	205	74	69	72
TRAP THICKNESS										128	131	129	66	55	62
TRAP INTENSITY										84	97	90	85	219	168
SUPER REFRACTIVE	80	43	123	59	35	94	67	57	63						
HEIGHT BASE										875	940	862	736	601	727
THICKNESS										187	181	185	103	92	100
INTENSITY										46	43	45	22	24	23
SUB REFRACTIVE	29	21	50	26	18	44	29	29	29						
HEIGHT BASE										1669	2060	1833	893	1179	1036
THICKNESS										185	234	205	141	171	157

FEBRUARY LAT 37.5N TO 41.0N, LONG 126.0W TO 146.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 47, 12Z= 53, ALL= 100

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	3	0	3	3	0	3	6	0	3	0	0	0	0	0	0
DUCT THICKNESS										117	0	117	95	0	95
TRAP THICKNESS										117	0	117	95	0	95
TRAP INTENSITY										53	0	53	31	0	31
NON-SFC DUCTS	11	13	24	11	12	23	23	22	23						
HEIGHT BASE DUCT										839	1048	952	365	344	369
HEIGHT BASE TRAP										860	1111	1010	340	338	355
DUCT THICKNESS										187	155	166	86	66	71
TRAP THICKNESS										106	90	97	58	40	50
TRAP INTENSITY										45	60	53	42	62	55
SUPER REFRACTIVE	17	15	32	16	14	30	34	26	30						
HEIGHT BASE										833	795	809	582	757	721
THICKNESS										190	191	191	119	111	114
INTENSITY										51	43	47	24	21	23
SUB REFRACTIVE	14	16	29	13	11	24	27	20	24						
HEIGHT BASE										1410	1854	1640	731	875	838
THICKNESS										202	183	192	147	110	130

FEBRUARY LAT 41.0N TO 46.0N, LONG 124.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, COZ= 70, 12Z= 80, ALL= 150

SURFACE DUCT	NUMBER RPTS 1 OR MORE COZ	12Z	ALL	PERCENT RPTS 1 OR MORE COZ	12Z	ALL	MEANS COZ	12Z	ALL	STANDARD DEVIATIONS COZ	12Z	ALL
HEIGHT BASE TRAP	5	7	8	5	7	8	7	9	5	0	0	2
DUCT THICKNESS							57	113	78	14	131	85
TRAP THICKNESS							57	113	78	14	130	85
TRAP INTENSITY							48	37	44	47	6	37
NON-SFC DUCTS	10	11	21	10	11	21	14	13	14			
HEIGHT BASE DUCT							861	769	784	369	422	399
HEIGHT BASE TRAP							855	857	856	359	365	378
DUCT THICKNESS							164	184	174	36	58	51
TRAP THICKNESS							110	96	103	33	40	37
TRAP INTENSITY							66	94	76	83	63	76
SUPER REFRACTIVE	48	42	90	37	36	73	52	45	48			
HEIGHT BASE							757	1050	894	597	672	649
THICKNESS							175	167	171	107	85	98
INTENSITY							50	48	49	18	24	21
SUB REFRACTIVE	9	17	26	7	16	23	10	20	15			
HEIGHT BASE							1747	2681	2317	765	1315	1229
THICKNESS							142	132	135	61	76	72

FEBRUARY LAT 46.0N TO 51.0N, LONG 124.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, COZ= 62, 12Z= 42, ALL= 104

SURFACE DUCT	NUMBER RPTS 1 OR MORE COZ	12Z	ALL	PERCENT RPTS 1 OR MORE COZ	12Z	ALL	MEANS COZ	12Z	ALL	STANDARD DEVIATIONS COZ	12Z	ALL
HEIGHT BASE TRAP	1	2	3	1	2	3	1	4	2	0	47	31
DUCT THICKNESS							178	206	196	0	46	39
TRAP THICKNESS							178	159	164	0	5	19
TRAP INTENSITY							32	87	62	0	19	39
NON-SFC DUCTS	1	2	3	1	1	2	1	2	1			
HEIGHT BASE DUCT							859	2372	1857	0	1791	1569
HEIGHT BASE TRAP							862	2413	1889	0	1709	1573
DUCT THICKNESS							147	191	176	0	56	52
TRAP THICKNESS							114	160	146	0	46	45
TRAP INTENSITY							32	62	52	0	56	48
SUPER REFRACTIVE	24	16	40	21	15	36	33	35	34			
HEIGHT BASE							751	784	776	635	799	666
THICKNESS							103	163	122	118	101	112
INTENSITY							58	61	60	19	18	16
SUB REFRACTIVE	4	6	10	4	5	9	6	11	8			
HEIGHT BASE							1667	1953	1803	946	1291	1170
THICKNESS							121	171	150	45	86	77

FEBRUARY LAT 29.0N TO 51.0N, LONG 123.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, COZ= 295, 12Z= 249, ALL= 534

SURFACE DUCT	NUMBER RPTS 1 OR MORE COZ	12Z	ALL	PERCENT RPTS 1 OR MORE COZ	12Z	ALL	MEANS COZ	12Z	ALL	STANDARD DEVIATIONS COZ	12Z	ALL
HEIGHT BASE TRAP	16	5	21	5	2	3	12	20	15	45	38	45
DUCT THICKNESS							104	150	115	79	114	91
TRAP THICKNESS							92	131	101	58	102	74
TRAP INTENSITY							52	54	53	53	28	48
NON-SFC DUCTS	66	65	131	63	60	123	22	24	23			
HEIGHT BASE DUCT							831	959	894	596	666	635
HEIGHT BASE TRAP							810	1036	968	588	667	626
DUCT THICKNESS							168	194	180	74	71	71
TRAP THICKNESS							119	113	116	57	54	55
TRAP INTENSITY							72	103	88	74	189	143
SUPER REFRACTIVE	213	152	365	165	131	296	57	52	55			
HEIGHT BASE							824	917	867	705	733	719
THICKNESS							186	201	194	110	101	105
INTENSITY							50	47	48	22	22	23
SUB REFRACTIVE	62	61	123	54	52	106	18	20	19			
HEIGHT BASE							1579	2103	1869	869	1187	1079
THICKNESS							170	188	179	129	134	132

Table 9

Statistics of the Discrete Categories of Refraction and Associated Specifying Parameters: March

MARCH LAT 29.0N TO 34.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 54, 12Z= 47, ALL= 101

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	5	2	7	5	2	7	9	4	6	0	0	0	0	0	0
DUCT THICKNESS										187	174	181	52	4	54
TRAP THICKNESS										187	174	181	52	4	54
TRAP INTENSITY										154	177	163	66	30	61
NON-SFC DUCTS	26	17	43	24	17	41	44	36	40						
HEIGHT BASE DUCT										1146	723	979	1125	262	917
HEIGHT BASE TRAP										1210	872	1066	1196	266	898
DUCT THICKNESS										196	218	204	91	75	86
TRAP THICKNESS										123	109	117	72	57	68
TRAP INTENSITY										88	118	100	115	85	105
SUPER REFRACTIVE	30	41	71	28	32	60	51	68	59						
HEIGHT BASE										1054	946	992	948	693	807
THICKNESS										217	241	230	159	136	152
INTENSITY										48	48	48	23	21	22
SUB REFRACTIVE	19	19	37	17	15	32	31	31	31						
HEIGHT BASE										1998	2083	2019	1267	1252	1261
THICKNESS										233	206	220	154	156	155

MARCH LAT 34.0N TO 37.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 86, 12Z= 79, ALL= 165

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	7	2	9	7	2	9	9	2	5	0	0	0	0	0	0
DUCT THICKNESS										79	84	82	28	33	31
TRAP THICKNESS										79	84	82	28	33	31
TRAP INTENSITY										98	21	81	95	18	90
NON-SFC DUCTS	31	19	50	28	19	47	32	24	28						
HEIGHT BASE DUCT										1052	990	1029	530	508	523
HEIGHT BASE TRAP										1137	1056	1106	499	475	486
DUCT THICKNESS										183	169	177	91	74	85
TRAP THICKNESS										98	113	100	55	31	49
TRAP INTENSITY										101	48	81	96	42	84
SUPER REFRACTIVE	75	65	140	58	56	114	67	71	69						
HEIGHT BASE										1104	1296	1189	832	591	735
THICKNESS										181	186	183	108	113	111
INTENSITY										47	50	48	23	21	23
SUB REFRACTIVE	32	26	58	27	24	51	31	30	30						
HEIGHT BASE										2048	2371	2148	1361	1024	1227
THICKNESS										191	197	167	83	158	124

MARCH LAT 37.0N TO 41.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 52, 12Z= 62, ALL= 114

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	0	0	0	5	0	5	8	0	4	0	0	0	0	0	0
DUCT THICKNESS										77	0	77	17	0	17
TRAP THICKNESS										77	0	77	17	0	17
TRAP INTENSITY										91	0	91	61	0	61
NON-SFC DUCTS	13	6	19	13	6	19	20	11	16						
HEIGHT BASE DUCT										866	1287	999	348	239	373
HEIGHT BASE TRAP										926	1349	1065	346	211	365
DUCT THICKNESS										153	131	173	46	64	61
TRAP THICKNESS										132	68	112	49	41	66
TRAP INTENSITY										96	89	93	41	117	75
SUPER REFRACTIVE	40	34	74	34	27	61	54	51	53						
HEIGHT BASE										815	1329	1037	736	734	778
THICKNESS										241	193	198	113	87	103
INTENSITY										93	99	95	19	20	19
SUB REFRACTIVE	17	12	29	15	10	25	24	19	21						
HEIGHT BASE										1820	2340	2035	1125	859	1043
THICKNESS										258	134	207	161	74	145

MARCH LAT 41.0N TO 46.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, COZ= 66, 12Z= 42, ALL= 108

SURFACE DUCT	NUMBER COZ	NUMBER 12Z	NUMBER ALL	NUM RPTS 1 OR MORE COZ	NUM RPTS 1 OR MORE 12Z	NUM RPTS 1 OR MORE ALL	PERCENT RPTS 1 OR MORE COZ	PERCENT RPTS 1 OR MORE 12Z	PERCENT RPTS 1 OR MORE ALL	MEANS COZ	MEANS 12Z	MEANS ALL	STANDARD DEVIATIONS COZ	STANDARD DEVIATIONS 12Z	STANDARD DEVIATIONS ALL
HEIGHT BASE TRAP	5	1	6	5	1	6	7	2	5	0	0	0	0	0	0
DUCT THICKNESS										141	113	135	74	0	69
TRAP THICKNESS										141	113	135	74	0	69
TRAP INTENSITY										28	71	35	18	0	23
NON-SFC DUCTS	8	7	15	8	7	15	12	16	13						
HEIGHT BASE DUCT										677	521	604	346	165	288
HEIGHT BASE TRAP										750	548	656	347	170	296
DUCT THICKNESS										168	134	151	49	46	49
TRAP THICKNESS										91	108	99	29	36	34
TRAP INTENSITY										34	14	25	38	12	35
SUPER REFRACTIVE	38	23	61	30	22	52	45	52	48						
HEIGHT BASE										556	563	711	555	1010	788
THICKNESS										171	229	193	92	139	115
INTENSITY										48	51	49	18	18	18
SUB REFRACTIVE	13	10	23	11	8	19	16	19	17						
HEIGHT BASE										1839	2704	2215	1290	1206	1320
THICKNESS										172	308	231	121	208	178

MARCH LAT 46.0N TO 51.0N, LONG 132.0W TO 146.0W NUMBER OF REPORTS FOR LAT ZONE, COZ= 46, 12Z= 38, ALL= 84

SURFACE DUCT	NUMBER COZ	NUMBER 12Z	NUMBER ALL	NUM RPTS 1 OR MORE COZ	NUM RPTS 1 OR MORE 12Z	NUM RPTS 1 OR MORE ALL	PERCENT RPTS 1 OR MORE COZ	PERCENT RPTS 1 OR MORE 12Z	PERCENT RPTS 1 OR MORE ALL	MEANS COZ	MEANS 12Z	MEANS ALL	STANDARD DEVIATIONS COZ	STANDARD DEVIATIONS 12Z	STANDARD DEVIATIONS ALL
HEIGHT BASE TRAP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DUCT THICKNESS										0	0	0	0	0	0
TRAP THICKNESS										0	0	0	0	0	0
TRAP INTENSITY										0	0	0	0	0	0
NON-SFC DUCTS	2	1	3	2	1	3	4	2	3						
HEIGHT BASE DUCT										250	79	193	94	0	111
HEIGHT BASE TRAP										369	147	268	29	0	99
DUCT THICKNESS										207	144	181	67	0	82
TRAP THICKNESS										161	79	108	3	0	21
TRAP INTENSITY										28	135	64	21	0	53
SUPER REFRACTIVE	9	8	17	7	8	15	15	21	17						
HEIGHT BASE										975	932	954	511	587	601
THICKNESS										124	204	161	49	90	83
INTENSITY										42	65	48	24	19	23
SUB REFRACTIVE	3	1	4	3	1	4	6	2	4						
HEIGHT BASE										1859	2582	2035	1246	0	1121
THICKNESS										72	47	66	37	0	52

MARCH LAT 29.0N TO 34.0N, LONG 121.0W TO 141.0W NUMBER OF REPORTS FOR LAT ZONE, COZ= 314, 12Z= 258, ALL= 572

SURFACE DUCT	NUMBER COZ	NUMBER 12Z	NUMBER ALL	NUM RPTS 1 OR MORE COZ	NUM RPTS 1 OR MORE 12Z	NUM RPTS 1 OR MORE ALL	PERCENT RPTS 1 OR MORE COZ	PERCENT RPTS 1 OR MORE 12Z	PERCENT RPTS 1 OR MORE ALL	MEANS COZ	MEANS 12Z	MEANS ALL	STANDARD DEVIATIONS COZ	STANDARD DEVIATIONS 12Z	STANDARD DEVIATIONS ALL
HEIGHT BASE TRAP	22	5	27	22	5	27	7	1	4	0	0	0	0	0	0
DUCT THICKNESS										117	126	119	67	47	64
TRAP THICKNESS										117	126	119	67	47	64
TRAP INTENSITY										93	93	93	92	74	80
NON-SFC DUCTS	80	50	130	75	50	125	23	19	21						
HEIGHT BASE DUCT										995	851	936	766	448	667
HEIGHT BASE TRAP										1079	926	1015	742	426	643
DUCT THICKNESS										187	175	182	82	78	81
TRAP THICKNESS										111	101	107	61	45	56
TRAP INTENSITY										81	71	78	94	80	89
SUPER REFRACTIVE	192	168	360	157	145	302	50	56	52						
HEIGHT BASE										922	1149	1028	874	733	780
THICKNESS										186	207	195	118	119	119
INTENSITY										48	51	50	22	21	20
SUB REFRACTIVE	94	67	161	73	58	131	23	22	22						
HEIGHT BASE										1942	2302	2102	1279	1193	1217
THICKNESS										192	198	195	134	163	147

Table 10

Statistics of the Discrete Categories of Refraction and Associated Specifying Parameters: April

APRIL LAT 29.0N TO 34.5N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 70, 12Z= 49, ALL= 119

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	11	2	13	11	2	13	15	4	10	14		12	47	0	44
DUCT THICKNESS										154	168	156	75	6	69
TRAP THICKNESS										139	169	143	48	5	47
TRAP INTENSITY										101	98	101	54	15	49
NON-SFC DUCTS	31	20	51	29	18	47	41	36	39						
HEIGHT BASE DUCT										853	937	884	473	909	680
HEIGHT BASE TRAP										662	1046	877	431	876	644
DUCT THICKNESS										214	244	211	84	104	92
TRAP THICKNESS										116	122	118	50	72	63
TRAP INTENSITY										114	136	123	151	228	185
SUPER REFRACTIVE	59	35	94	45	30	75	64	61	63						
HEIGHT BASE										1148	1227	1177	874	969	911
THICKNESS										175	202	185	134	115	128
INTENSITY										39	47	42	23	21	23
SUB REFRACTIVE	27	12	39	22	11	33	31	22	27						
HEIGHT BASE										1735	1736	1735	1136	752	954
THICKNESS										165	169	166	89	96	91

APRIL LAT 34.5N TO 37.5N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 124, 12Z= 110, ALL= 234

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	7	3	10	7	3	10	5	2	4	0	0	0	0	0	0
DUCT THICKNESS										127	56	103	58	20	56
TRAP THICKNESS										167	56	126	58	20	56
TRAP INTENSITY										99	93	96	29	93	45
NON-SFC DUCTS	36	24	60	35	22	57	28	20	24						
HEIGHT BASE DUCT										944	1011	967	585	699	637
HEIGHT BASE TRAP										1036	1077	1052	591	682	629
DUCT THICKNESS										269	200	248	71	71	74
TRAP THICKNESS										141	126	136	55	50	52
TRAP INTENSITY										113	70	96	309	61	168
SUPER REFRACTIVE	68	78	146	70	68	138	56	61	58						
HEIGHT BASE										907	1269	1077	687	698	716
THICKNESS										220	216	218	125	111	119
INTENSITY										49	51	50	24	21	22
SUB REFRACTIVE	48	35	83	34	28	62	27	25	26						
HEIGHT BASE										2002	1916	1966	1111	844	1008
THICKNESS										213	189	203	112	140	125

APRIL LAT 37.5N TO 40.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 82, 12Z= 80, ALL= 163

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	2	2	4	2	2	4	2	2	2	0	0	0	0	0	0
DUCT THICKNESS										40	123	81	11	61	56
TRAP THICKNESS										40	123	81	11	61	56
TRAP INTENSITY										86	110	98	54	46	50
NON-SFC DUCTS	5	10	15	5	10	15	6	12	9						
HEIGHT BASE DUCT										1015	1009	1011	536	337	414
HEIGHT BASE TRAP										1074	1064	1067	522	313	396
DUCT THICKNESS										167	191	181	75	61	69
TRAP THICKNESS										103	146	128	55	48	53
TRAP INTENSITY										62	35	43	35	29	34
SUPER REFRACTIVE	37	42	79	47	35	82	56	43	50						
HEIGHT BASE										1060	1363	1200	834	755	850
THICKNESS										143	172	159	84	101	96
INTENSITY										48	51	50	22	21	20
SUB REFRACTIVE	32	21	53	24	18	42	29	22	25						
HEIGHT BASE										2477	2508	2489	1156	1170	1163
THICKNESS										253	168	219	151	84	141

APRIL LAT 41.0N TO 46.0N, LONG 120.0W TO 140.0W. NUMBER OF REPORTS FOR LAT ZONE, COZ= 107, 12Z= 84, ALL= 191

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL
HEIGHT BASE TRAP	9	2	9	7	2	9	6	2	4	23		18	57	U	52
DUCT THICKNESS										110	84	97	82	3	72
TRAP THICKNESS										87	59	75	29	3	29
TRAP INTENSITY										47	265	96	35	222	142
NON-SFC DUCTS	8	8	16	8	8	16	7	9	8						
HEIGHT BASE DUCT										1052	994	1023	970	828	850
HEIGHT BASE TRAP										1109	1269	1197	974	856	866
DUCT THICKNESS										162	168	167	56	38	50
TRAP THICKNESS										96	114	102	49	46	47
TRAP INTENSITY										87	309	198	85	646	474
SUPER REFRACTIVE	62	38	100	49	33	82	45	39	42						
HEIGHT BASE										1124	1259	1175	786	937	849
THICKNESS										176	191	179	90	93	91
INTENSITY										50	56	52	20	20	20
SUB REFRACTIVE	47	24	71	37	21	58	34	25	30						
HEIGHT BASE										1927	2167	2035	1143	1193	1165
THICKNESS										205	230	214	151	167	156

APRIL LAT 46.0N TO 51.0N, LONG 120.0W TO 140.0W. NUMBER OF REPORTS FOR LAT ZONE, COZ= 51, 12Z= 40, ALL= 91

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL
HEIGHT BASE TRAP	4	1	5	4	1	5	7	2	5	41	0	32	71	0	66
DUCT THICKNESS										98	162	139	73	0	69
TRAP THICKNESS										64	162	76	23	0	47
TRAP INTENSITY										113	45	99	98	0	99
NON-SFC DUCTS	4	3	7	4	3	7	7	7	7						
HEIGHT BASE DUCT										1073	1743	1360	125	1558	1077
HEIGHT BASE TRAP										1106	1329	1416	137	1578	1098
DUCT THICKNESS										104	144	121	54	43	44
TRAP THICKNESS										71	59	65	21	16	22
TRAP INTENSITY										84	215	106	14	178	150
SUPER REFRACTIVE	25	13	38	23	12	35	45	30	38						
HEIGHT BASE										705	778	730	686	600	658
THICKNESS										168	217	186	101	87	98
INTENSITY										45	63	51	22	14	22
SUB REFRACTIVE	6	8	14	6	7	13	11	17	14						
HEIGHT BASE										1689	1941	1833	937	1078	1151
THICKNESS										121	217	176	92	148	135

APRIL LAT 29.0N TO 51.0N, LONG 120.0W TO 140.0W. NUMBER OF REPORTS FOR LAT ZONE, COZ= 439, 12Z= 363, ALL= 799

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL
HEIGHT BASE TRAP	31	10	41	32	10	42	7	2	5	15	9	12	45	0	42
DUCT THICKNESS										123	101	117	75	66	73
TRAP THICKNESS										147	101	135	54	66	66
TRAP INTENSITY										75	127	89	56	128	82
NON-SFC DUCTS	84	65	149	91	61	142	18	16	17						
HEIGHT BASE DUCT										931	1015	967	570	821	693
HEIGHT BASE TRAP										1017	1068	1040	558	810	681
DUCT THICKNESS										154	193	166	91	80	81
TRAP THICKNESS										117	120	118	57	58	56
TRAP INTENSITY										104	121	111	169	279	223
SUPER REFRACTIVE	291	206	497	234	178	412	53	49	51						
HEIGHT BASE										1010	1243	1114	803	814	815
THICKNESS										154	198	172	112	107	111
INTENSITY										47	82	49	32	21	22
SUB REFRACTIVE	169	120	289	123	85	208	28	23	26						
HEIGHT BASE										2016	2070	2040	1138	1068	1111
THICKNESS										207	194	202	135	136	135

Table 11

Statistics of the Discrete Categories of Refraction and Associated Specifying Parameters: May

MAY LAT 29.0N TO 34.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, OOZ= 42, 12Z= 41, ALL= 83

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL
SURFACE DUCT	7	12	9	7	9	9	9	12	10	57	7	26	99	0	72
HEIGHT BASE TRAP										160	154	166	102	96	75
DUCT THICKNESS										123	164	140	32	36	38
TRAP THICKNESS										96	112	106	91	54	73
TRAP INTENSITY															
NON-SFC DUCTS	18	12	30	17	11	28	40	26	33						
HEIGHT BASE DUCT										974	1083	1017	436	562	494
HEIGHT BASE TRAP										1062	1163	1097	438	541	497
DUCT THICKNESS										144	166	187	73	63	70
TRAP THICKNESS										102	104	111	57	66	67
TRAP INTENSITY										114	75	98	118	60	99
SUPER REFRACTIVE	38	28	66	26	25	51	61	60	61						
HEIGHT BASE										1156	1354	1243	964	1145	1001
THICKNESS										160	183	182	111	131	119
INTENSITY										48	47	48	21	22	21
SUB REFRACTIVE	11	17	28	11	14	25	26	34	30						
HEIGHT BASE										1867	2477	2237	1429	1249	1356
THICKNESS										187	164	173	139	120	129

MAY LAT 34.5N TO 37.5N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, OOZ= 67, 12Z= 62, ALL= 129

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL
SURFACE DUCT	13	2	15	13	2	15	19	3	11	0	0	0	0	0	0
HEIGHT BASE TRAP										0	0	0	0	0	0
DUCT THICKNESS										100	110	102	41	16	37
TRAP THICKNESS										100	11	102	41	16	37
TRAP INTENSITY										76	109	80	56	43	55
NON-SFC DUCTS	20	15	35	20	13	33	29	20	25						
HEIGHT BASE DUCT										1164	1153	1159	422	505	461
HEIGHT BASE TRAP										1256	1175	1224	404	464	433
DUCT THICKNESS										169	191	180	67	82	75
TRAP THICKNESS										127	114	123	51	48	50
TRAP INTENSITY										50	54	53	54	54	55
SUPER REFRACTIVE	60	49	109	44	37	81	65	59	62						
HEIGHT BASE										1061	1297	1167	757	889	833
THICKNESS										181	191	185	142	90	97
INTENSITY										49	50	49	23	22	22
SUB REFRACTIVE	30	24	54	19	20	39	29	32	30						
HEIGHT BASE										1871	2486	2109	1124	1054	1125
THICKNESS										187	159	174	111	89	103

MAY LAT 37.5N TO 41.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, OOZ= 66, 12Z= 62, ALL= 134

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL
SURFACE DUCT	8	0	8	8	0	8	11	0	6	0	0	0	0	0	0
HEIGHT BASE TRAP										69	0	69	22	0	22
DUCT THICKNESS										57	0	57	22	0	22
TRAP THICKNESS										79	0	79	96	0	96
TRAP INTENSITY															
NON-SFC DUCTS	7	9	15	7	7	14	10	11	10						
HEIGHT BASE DUCT										1021	1023	1020	247	471	384
HEIGHT BASE TRAP										1064	1197	1060	230	477	378
DUCT THICKNESS										143	173	151	46	51	48
TRAP THICKNESS										85	66	91	33	47	39
TRAP INTENSITY										43	26	34	48	21	37
SUPER REFRACTIVE	44	35	79	36	31	67	52	50	51						
HEIGHT BASE										938	1447	1164	956	643	809
THICKNESS										177	193	184	114	90	102
INTENSITY										45	50	47	24	22	23
SUB REFRACTIVE	23	21	44	20	15	35	28	24	26						
HEIGHT BASE										2329	1973	2192	1412	821	1214
THICKNESS										199	207	203	203	139	172

MAY LAT 41.0N TO 46.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 139, 12Z= 120, ALL= 259

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	3	1	4	3	1	4	2	0	1	69	0	44	45	0	78
DUCT THICKNESS										144	321	186	96	0	114
TRAP THICKNESS										66	361	145	34	0	106
TRAP INTENSITY										97	99	81	114	0	103
NON-SFC DUCTS	22	17	39	20	14	34	14	11	13						
HEIGHT BASE DUCT										1314	1485	1388	925	964	946
HEIGHT BASE TRAP										1378	1549	1452	917	947	932
DUCT THICKNESS										158	188	169	69	62	67
TRAP THICKNESS										64	126	89	45	43	44
TRAP INTENSITY										109	111	110	115	155	134
SUPER REFRACTIVE	84	48	132	67	41	108	48	34	41						
HEIGHT BASE										1129	1472	1254	992	776	914
THICKNESS										169	201	172	109	123	123
INTENSITY										55	63	54	20	21	21
SUB REFRACTIVE	49	37	86	42	31	73	30	25	28						
HEIGHT BASE										2450	2329	2389	1350	1064	1228
THICKNESS										212	226	218	133	144	138

MAY LAT 46.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 55, 12Z= 39, ALL= 94

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	4	1	5	4	1	5	7	2	5	0	0	0	0	0	0
DUCT THICKNESS										68	87	75	15	0	13
TRAP THICKNESS										68	87	75	15	0	13
TRAP INTENSITY										38	32	37	11	0	9
NON-SFC DUCTS	0	2	2	0	2	2	0	5	2						
HEIGHT BASE DUCT										0	411	411	0	302	302
HEIGHT BASE TRAP										0	428	428	0	283	283
DUCT THICKNESS										0	102	102	0	60	60
TRAP THICKNESS										0	76	76	0	41	41
TRAP INTENSITY										0	27	27	0	9	9
SUPER REFRACTIVE	30	15	45	23	12	35	41	31	37						
HEIGHT BASE										902	573	792	948	480	837
THICKNESS										140	170	150	69	88	75
INTENSITY										52	55	51	17	22	20
SUB REFRACTIVE	8	3	11	7	3	10	12	7	10						
HEIGHT BASE										2271	1759	2131	1146	1388	1239
THICKNESS										142	117	132	96	41	79

MAY LAT 29.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 372, 12Z= 324, ALL= 696

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	32	9	41	32	9	41	8	2	5	42	9	50	67	0	44
DUCT THICKNESS										109	155	112	67	71	71
TRAP THICKNESS										87	155	104	39	70	65
TRAP INTENSITY										75	93	79	78	56	74
NON-SFC DUCTS	67	54	121	64	47	111	17	14	15						
HEIGHT BASE DUCT										1115	1180	1139	544	728	683
HEIGHT BASE TRAP										1170	1243	1200	636	708	669
DUCT THICKNESS										171	173	171	71	71	72
TRAP THICKNESS										105	111	107	52	50	51
TRAP INTENSITY										86	72	80	101	100	100
SUPER REFRACTIVE	254	175	429	196	146	342	52	45	49						
HEIGHT BASE										1057	1322	1165	890	870	892
THICKNESS										177	199	186	111	106	110
INTENSITY										49	57	49	22	22	23
SUB REFRACTIVE	126	101	227	99	83	182	26	25	26						
HEIGHT BASE										2223	2279	2248	1333	1180	1227
THICKNESS										196	191	194	147	125	139

Table 12

Statistics of the Discrete Categories of Refraction and Associated Specifying Parameters: June

JUNE LAT 29.[illegible]N TO 34.5N, LONG 121.[illegible]W TO 144.[illegible]W NUMBER OF REPORTS FOR LAT ZONE, OOZ= 61, 12Z= 42, ALL= 103

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL
HEIGHT BASE TRAP	10	5	15	10	0	10	16	0	9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DUCT THICKNESS										148	0	148	48	0	48
TRAP THICKNESS										148	0	148	48	0	48
TRAP INTENSITY										94	0	94	110	0	110
NON-SFC DUCTS	32	30	62	31	27	58	50	64	56						
HEIGHT BASE DUCT										727	749	735	305	459	412
HEIGHT BASE TRAP										949	953	950	207	455	372
DUCT THICKNESS										268	261	264	89	113	102
TRAP THICKNESS										145	143	144	68	91	80
TRAP INTENSITY										180	102	142	365	186	275
SUPER REFRACTIVE	57	43	100	41	32	73	67	76	70						
HEIGHT BASE										1006	1158	1072	960	833	910
THICKNESS										210	199	205	128	141	134
INTENSITY										45	50	47	24	20	23
SUB REFRACTIVE	25	22	47	22	17	39	36	40	37						
HEIGHT BASE										2066	2316	2184	1538	1466	1492
THICKNESS										245	172	211	163	117	148

JUNE LAT 34.5N TO 37.5N, LONG 121.[illegible]W TO 144.[illegible]W NUMBER OF REPORTS FOR LAT ZONE, OOZ= 51, 12Z= 53, ALL= 104

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL
HEIGHT BASE TRAP	7	2	9	6	2	8	11	3	7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DUCT THICKNESS										91	55	124	75	116	
TRAP THICKNESS										144	206	162	163	177	170
TRAP INTENSITY										64	154	109	62	106	89
										109	87	104	77	76	69
NON-SFC DUCTS	33	30	63	32	27	59	62	50	56						
HEIGHT BASE DUCT										867	879	888	530	646	590
HEIGHT BASE TRAP										967	969	968	526	614	571
DUCT THICKNESS										233	204	220	86	84	80
TRAP THICKNESS										112	100	110	45	65	56
TRAP INTENSITY										141	130	115	98	143	122
SUPER REFRACTIVE	51	48	99	36	34	70	70	64	67						
HEIGHT BASE										1179	1140	1160	902	769	842
THICKNESS										162	209	185	103	139	123
INTENSITY										55	52	48	23	22	23
SUB REFRACTIVE	34	31	65	25	23	48	49	43	46						
HEIGHT BASE										2064	2056	2060	1270	1215	1244
THICKNESS										195	241	217	215	143	181

JUNE LAT 37.5N TO 41.[illegible]N, LONG 121.[illegible]W TO 144.[illegible]W NUMBER OF REPORTS FOR LAT ZONE, OOZ= 60, 12Z= 47, ALL= 107

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL	OOZ	12Z	ALL
HEIGHT BASE TRAP	7	4	11	7	4	11	11	8	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
DUCT THICKNESS										80	43	65	75	75	51
TRAP THICKNESS										99	57	73	22	22	52
TRAP INTENSITY										127	120	124	124	119	123
NON-SFC DUCTS	17	9	26	17	9	26	28	19	24						
HEIGHT BASE DUCT										667	488	616	363	395	385
HEIGHT BASE TRAP										740	533	704	338	407	379
DUCT THICKNESS										234	167	221	56	88	71
TRAP THICKNESS										158	122	146	56	53	55
TRAP INTENSITY										79	40	65	70	42	65
SUPER REFRACTIVE	61	41	102	42	28	70	70	59	65						
HEIGHT BASE										744	1001	846	783	824	809
THICKNESS										168	198	181	93	120	106
INTENSITY										48	57	50	24	21	23
SUB REFRACTIVE	32	25	57	28	23	51	46	46	46						
HEIGHT BASE										1569	2038	1828	1167	1164	1165
THICKNESS										221	240	231	135	134	132

JUNE LAT 41.0N TO 46.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 116, 12Z= 89, ALL= 205

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	5	0	5	5	0	5	4	0	2	1		1	3	0	3
DUCT THICKNESS										68		68	30	0	30
TRAP THICKNESS										68		68	30	0	30
TRAP INTENSITY										79		79	44	0	44
NON-SFC DUCTS	25	15	40	24	15	39	20	16	19						
HEIGHT BASE DUCT										1015	921	979	535	517	532
HEIGHT BASE TRAP										1179	966	1042	916	504	513
DUCT THICKNESS										180	196	186	52	54	60
TRAP THICKNESS										116	137	123	49	45	50
TRAP INTENSITY										141	141	142	565	57	452
SUPER REFRACTIVE	80	55	135	65	42	107	56	47	52						
HEIGHT BASE										1204	1116	1168	928	777	909
THICKNESS										196	189	194	111	96	105
INTENSITY										49	49	49	23	21	22
SUB REFRACTIVE	56	41	97	48	31	79	41	34	38						
HEIGHT BASE										2002	2018	2009	1183	1427	1292
THICKNESS										227	219	223	137	126	123

JUNE LAT 46.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 77, 12Z= 49, ALL= 126

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	7	0	7	7	0	7	9	0	5	0		0	0	0	0
DUCT THICKNESS										72		72	17	0	17
TRAP THICKNESS										72		72	17	0	17
TRAP INTENSITY										70		70	89	0	89
NON-SFC DUCTS	9	3	12	8	3	11	10	6	8						
HEIGHT BASE DUCT										1314	821	1141	829	297	791
HEIGHT BASE TRAP										1502	798	1236	798	305	747
DUCT THICKNESS										167	168	167	108	97	94
TRAP THICKNESS										82	140	100	32	41	40
TRAP INTENSITY										64	140	82	67	87	79
SUPER REFRACTIVE	47	25	72	40	19	59	51	38	46						
HEIGHT BASE										891	1065	952	916	1032	961
THICKNESS										194	187	165	85	108	96
INTENSITY										40	61	48	24	19	22
SUB REFRACTIVE	37	23	60	27	17	44	35	34	34						
HEIGHT BASE										1505	2070	1721	1176	1263	1242
THICKNESS										199	204	201	133	154	139

JUNE LAT 29.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 365, 12Z= 280, ALL= 645

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	36	6	42	35	6	41	9	2	6	12	54	26	56	77	67
DUCT THICKNESS										102	104	107	98	134	117
TRAP THICKNESS										92	94	91	91	77	86
TRAP INTENSITY										99	109	99	99	99	99
NON-SFC DUCTS	116	87	203	112	81	193	30	28	29						
HEIGHT BASE DUCT										876	791	840	521	559	539
HEIGHT BASE TRAP										973	891	938	488	526	511
DUCT THICKNESS										227	214	226	83	97	89
TRAP THICKNESS										124	133	128	56	72	63
TRAP INTENSITY										138	99	126	334	114	264
SUPER REFRACTIVE	236	218	454	224	155	379	61	55	58						
HEIGHT BASE										1017	1164	1053	934	830	894
THICKNESS										180	198	189	122	122	114
INTENSITY										47	51	49	23	21	21
SUB REFRACTIVE	184	152	336	150	110	260	41	39	40						
HEIGHT BASE										1863	2167	1977	1252	1315	1298
THICKNESS										217	219	218	136	136	136

Table 13

Statistics of the Discrete Categories of Refraction and Associated Specifying Parameters: July

JULY LAT 29..N TO 34.5N, LONG 12..W TO 141.0W NUMBER OF REPORTS FOR LAT ZONE, CCZ= 80, 12Z= 42, ALL= 92

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL
HEIGHT BASE TRAP	9	3	12	9	3	12	11	7	13	133	247	161	193	98	148
DUCT THICKNESS										274	405	312	145	51	144
TRAP THICKNESS										141	151	141	27	7?	40
TRAP INTENSITY										166	185	172	120	91	113
NON-SFC DUCTS	43	24	68	35	27	62	70	64	67						
HEIGHT BASE DUCT										604	619	610	323	525	419
HEIGHT BASE TRAP										763	791	775	297	775	781
DUCT THICKNESS										288	311	296	114	115	114
TRAP THICKNESS										129	141	135	59	78	77
TRAP INTENSITY										152	99	129	128	101	122
SUPER REFRACTIVE	40	42	82	30	28	58	60	66	63						
HEIGHT BASE										687	1105	932	725	1101	966
THICKNESS										206	163	192	195	143	148
INTENSITY										45	21	48	24	29	24
SUB REFRACTIVE	31	37	67	23	25	48	46	59	52						
HEIGHT BASE										1557	1743	1660	976	1354	1167
THICKNESS										261	239	249	187	179	183

JULY LAT 3..5N TO 37.5N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, CCZ= 57, 12Z= 59, ALL= 116

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL
HEIGHT BASE TRAP	5	1	6	5	1	6	8	1	5	0	0	0	0	0	0
DUCT THICKNESS										84	107	71	18	0	24
TRAP THICKNESS										84	107	71	18	0	24
TRAP INTENSITY										43	42	41	26	0	23
NON-SFC DUCTS	37	21	58	36	21	57	63	35	49						
HEIGHT BASE DUCT										774	646	728	387	302	363
HEIGHT BASE TRAP										852	769	846	369	254	329
DUCT THICKNESS										287	283	254	93	66	96
TRAP THICKNESS										119	163	139	50	64	59
TRAP INTENSITY										148	97	124	124	143	120
SUPER REFRACTIVE	38	39	117	40	45	85	70	76	73						
HEIGHT BASE										945	1072	999	776	638	714
THICKNESS										208	209	210	120	132	127
INTENSITY										45	50	48	23	23	23
SUB REFRACTIVE	19	27	46	14	25	39	24	42	33						
HEIGHT BASE										1509	1867	1729	1103	1359	1292
THICKNESS										168	263	226	88	138	123

JULY LAT 37.5N TO 41..N, LONG 122..W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, CCZ= 52, 12Z= 41, ALL= 93

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL
HEIGHT BASE TRAP	2	0	2	2	0	2	3	0	2	0	0	0	0	0	0
DUCT THICKNESS										66	0	66	12	0	12
TRAP THICKNESS										66	0	66	12	0	12
TRAP INTENSITY										59	0	59	26	0	26
NON-SFC DUCTS	24	13	37	19	13	32	36	31	34						
HEIGHT BASE DUCT										970	1024	1032	763	872	810
HEIGHT BASE TRAP										1058	1310	1134	737	834	790
DUCT THICKNESS										247	280	254	124	77	97
TRAP THICKNESS										126	114	124	73	49	67
TRAP INTENSITY										170	79	137	382	75	314
SUPER REFRACTIVE	46	47	93	33	34	67	63	73	67						
HEIGHT BASE										1312	1531	1422	979	974	984
THICKNESS										196	198	197	122	166	114
INTENSITY										46	45	46	25	22	24
SUB REFRACTIVE	44	38	82	26	22	48	50	56	52						
HEIGHT BASE										2162	2305	2226	1381	1190	1304
THICKNESS										198	197	198	132	130	131

JULY LAT 41.0N TO 46.0N, LONG 124.0W TO 146.0W NUMBER OF REPORTS FOR LAT ZONE, CCZ= 87, 12Z= 78, ALL= 165

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL
HEIGHT BASE TRAP	0	1	1	0	1	1	0	1	0	0			0	0	0
DUCT THICKNESS										0	188	188	0	0	0
TRAP THICKNESS										0	168	168	0	0	0
TRAP INTENSITY										0	101	101	0	0	0
NON-SFC DUCTS	15	12	27	14	10	24	16	12	14						
HEIGHT BASE DUCT										1359	1760	1248	1103	745	976
HEIGHT BASE TRAP										1452	1139	1310	1073	735	951
DUCT THICKNESS										165	175	172	70	90	80
TRAP THICKNESS										112	104	108	44	71	57
TRAP INTENSITY										94	127	84	69	191	142
SUPER REFRACTIVE	69	62	131	62	46	98	59	58	59						
HEIGHT BASE										1212	1281	1244	812	984	894
THICKNESS										216	231	221	139	141	165
INTENSITY										53	51	52	21	22	22
SUB REFRACTIVE	50	39	89	38	31	67	41	39	40						
HEIGHT BASE										2259	2354	2327	1312	1460	1379
THICKNESS										166	194	178	106	158	132

JULY LAT 46.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, CCZ= 56, 12Z= 51, ALL= 107

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL
HEIGHT BASE TRAP	4	0	4	4	0	4	7	0	3	0	0	0	0	0	0
DUCT THICKNESS										70	0	70	14	0	14
TRAP THICKNESS										70	0	70	14	0	14
TRAP INTENSITY										100	0	100	95	0	95
NON-SFC DUCTS	4	6	10	4	6	10	7	11	9						
HEIGHT BASE DUCT										835	936	816	319	563	502
HEIGHT BASE TRAP										718	1045	812	338	487	467
DUCT THICKNESS										168	216	203	35	117	94
TRAP THICKNESS										111	107	109	21	44	38
TRAP INTENSITY										50	53	51	31	46	42
SUPER REFRACTIVE	31	29	60	27	23	50	48	45	46						
HEIGHT BASE										797	856	826	738	692	711
THICKNESS										191	238	214	103	157	133
INTENSITY										60	55	57	15	19	19
SUB REFRACTIVE	20	17	37	17	13	30	30	25	28						
HEIGHT BASE										2240	1611	1951	1340	775	1159
THICKNESS										185	188	187	102	70	88

JULY LAT 29.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, CCZ= 302, 12Z= 271, ALL= 573

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL
HEIGHT BASE TRAP	20	5	25	20	5	25	6	1	4	60	146	77	122	141	131
DUCT THICKNESS										160	214	151	142	144	155
TRAP THICKNESS										147	168	113	43	67	57
TRAP INTENSITY										110	109	116	107	92	104
NON-SFC DUCTS	120	80	200	108	77	185	35	28	32						
HEIGHT BASE DUCT										822	814	819	642	640	641
HEIGHT BASE TRAP										642	620	636	612	597	607
DUCT THICKNESS										247	268	249	107	115	111
TRAP THICKNESS										120	148	133	62	74	68
TRAP INTENSITY										126	94	114	201	126	175
SUPER REFRACTIVE	244	239	483	182	172	354	61	63	61						
HEIGHT BASE										1024	1200	1114	844	923	889
THICKNESS										244	247	244	119	145	132
INTENSITY										50	50	50	22	23	22
SUB REFRACTIVE	163	156	319	116	117	233	38	63	40						
HEIGHT BASE										2026	2035	2031	1285	1287	1283
THICKNESS										197	215	206	134	149	141

Table 14

Statistics of the Discrete Categories of Refraction and Associated Specifying Parameters: August

AUGUST LAT 29.0N TO 34.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 61, 12Z= 61, ALL= 122

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	2	1	3	2	1	3	3	1	2	0	0	0	0	0	0
DUCT THICKNESS										171	262	201	34	0	62
TRAP THICKNESS										171	262	201	34	0	62
TRAP INTENSITY										205	78	162	128	0	121
NON-SFC DUCTS	55	49	104	48	41	89	78	67	72						
HEIGHT BASE DUCT										859	830	850	569	397	494
HEIGHT BASE TRAP										1005	992	979	533	781	669
DUCT THICKNESS										245	265	271	115	112	113
TRAP THICKNESS										135	154	141	32	84	83
TRAP INTENSITY										139	93	117	155	170	164
SUPER REFRACTIVE	58	48	106	39	41	80	63	67	65						
HEIGHT BASE										956	1114	1028	674	586	640
THICKNESS										202	243	220	153	126	145
INTENSITY										48	41	45	19	23	21
SUB REFRACTIVE	41	41	82	29	30	59	47	49	48						
HEIGHT BASE										1864	2078	1971	1154	1286	1226
THICKNESS										291	209	250	228	193	198

AUGUST LAT 34.8N TO 37.8N, LONG 121.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 46, 12Z= 47, ALL= 92

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	8	0	8	8	0	8	17	0	8	0	0	0	0	0	0
DUCT THICKNESS										76	0	76	31	0	31
TRAP THICKNESS										76	0	76	31	0	31
TRAP INTENSITY										137	0	137	135	0	135
NON-SFC DUCTS	24	25	49	24	24	48	53	51	52						
HEIGHT BASE DUCT										1075	954	1013	380	464	430
HEIGHT BASE TRAP										1183	1169	1125	362	477	406
DUCT THICKNESS										244	244	244	96	97	96
TRAP THICKNESS										137	120	133	63	66	69
TRAP INTENSITY										72	84	78	65	82	74
SUPER REFRACTIVE	46	43	89	34	35	69	75	74	75						
HEIGHT BASE										1035	1224	1126	691	597	655
THICKNESS										207	208	208	137	146	142
INTENSITY										44	44	44	22	21	22
SUB REFRACTIVE	19	25	44	15	19	34	33	43	39						
HEIGHT BASE										1757	2126	1967	1035	1253	1176
THICKNESS										190	245	221	105	198	160

AUGUST LAT 37.8N TO 41.8N, LONG 121.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 64, 12Z= 40, ALL= 104

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	7	0	7	7	0	7	10	0	6	1	0	1	3	0	3
DUCT THICKNESS										135	0	135	21	0	21
TRAP THICKNESS										135	0	135	21	0	21
TRAP INTENSITY										44	0	44	48	0	48
NON-SFC DUCTS	35	12	37	24	12	36	37	30	34						
HEIGHT BASE DUCT										1118	1669	1167	444	576	481
HEIGHT BASE TRAP										1201	1756	1286	427	514	461
DUCT THICKNESS										206	214	206	66	55	61
TRAP THICKNESS										120	151	123	47	68	49
TRAP INTENSITY										96	114	102	109	157	127
SUPER REFRACTIVE	62	37	99	45	29	74	70	72	71						
HEIGHT BASE										1112	1581	1266	899	1008	990
THICKNESS										215	220	206	103	96	113
INTENSITY										45	47	50	23	19	22
SUB REFRACTIVE	29	21	47	22	18	40	34	43	38						
HEIGHT BASE										2161	2887	2451	1035	1289	1222
THICKNESS										197	233	215	119	125	119

AUGUST LAT 41.0N TO 46.0N, LONG 129.0W TO 141.0W NUMBER OF REPORTS FOR LAT ZONE, CDZ= 89, 12Z= 73, ALL= 162

SURFACE DUCT	NUMBER RPTS 1 OR MORE CDZ	12Z	ALL	NUMB RPTS 1 OR MORE CDZ	12Z	ALL	PERCENT RPTS 1 OR MORE CDZ	12Z	ALL	MEANS CDZ	12Z	ALL	STANDARD DEVIATIONS CDZ	12Z	ALL
HEIGHT BASE TRAP	6	1	7	6	1	7	6	1	4	0	0	0	0	0	0
DUCT THICKNESS										73	103	77	23	0	23
TRAP THICKNESS										73	103	77	23	0	23
TRAP INTENSITY										62	2	59	42	0	50
NON-SFC DUCTS	19	12	31	18	12	30	21	15	18						
HEIGHT BASE DUCT										1377	1353	1368	536	369	478
HEIGHT BASE TRAP										1421	1414	1420	533	342	467
DUCT THICKNESS										148	177	157	57	80	69
TRAP THICKNESS										104	107	105	45	62	52
TRAP INTENSITY										30	50	37	20	50	37
SUPER REFRACTIVE	64	44	108	51	34	84	56	46	51						
HEIGHT BASE										1545	1671	1556	919	857	890
THICKNESS										218	217	218	134	112	125
INTENSITY										51	49	50	21	22	22
SUB REFRACTIVE	49	22	71	32	19	51	35	26	31						
HEIGHT BASE										2459	2370	2454	1145	991	1102
THICKNESS										230	224	215	109	132	116

AUGUST LAT 46.0N TO 51.0N, LONG 129.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, CDZ= 46, 12Z= 37, ALL= 83

SURFACE DUCT	NUMBER RPTS 1 OR MORE CDZ	12Z	ALL	NUMB RPTS 1 OR MORE CDZ	12Z	ALL	PERCENT RPTS 1 OR MORE CDZ	12Z	ALL	MEANS CDZ	12Z	ALL	STANDARD DEVIATIONS CDZ	12Z	ALL
HEIGHT BASE TRAP	4	0	4	4	0	4	8	0	4	85	0	85	149	0	149
DUCT THICKNESS										145	0	152	154	0	154
TRAP THICKNESS										67	0	67	12	0	12
TRAP INTENSITY										169	0	166	116	0	116
NON-SFC DUCTS	3	8	11	3	8	11	6	21	13						
HEIGHT BASE DUCT										1428	1466	1456	342	930	813
HEIGHT BASE TRAP										1512	1534	1528	355	952	832
DUCT THICKNESS										156	141	148	23	72	61
TRAP THICKNESS										89	71	76	37	78	57
TRAP INTENSITY										283	179	207	323	204	247
SUPER REFRACTIVE	30	15	45	27	12	39	58	32	46						
HEIGHT BASE										628	1265	850	776	1007	915
THICKNESS										211	251	224	137	147	142
INTENSITY										40	55	45	26	21	25
SUB REFRACTIVE	11	15	26	9	14	23	19	37	27						
HEIGHT BASE										2160	2700	2472	1192	1219	1236
THICKNESS										269	266	277	158	193	180

AUGUST LAT 29.0N TO 51.0N, LONG 129.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, CDZ= 225, 12Z= 258, ALL= 563

SURFACE DUCT	NUMBER RPTS 1 OR MORE CDZ	12Z	ALL	NUMB RPTS 1 OR MORE CDZ	12Z	ALL	PERCENT RPTS 1 OR MORE CDZ	12Z	ALL	MEANS CDZ	12Z	ALL	STANDARD DEVIATIONS CDZ	12Z	ALL
HEIGHT BASE TRAP	27	2	29	27	2	29	8	2	5	73	12	65	0	0	63
DUCT THICKNESS										109	181	114	74	81	77
TRAP THICKNESS										65	181	102	43	81	54
TRAP INTENSITY										112	49	107	110	38	109
NON-SFC DUCTS	126	106	232	117	97	214	38	37	38						
HEIGHT BASE DUCT										1043	1061	1033	539	530	537
HEIGHT BASE TRAP										1156	1158	1156	534	547	541
DUCT THICKNESS										259	282	274	136	187	164
TRAP THICKNESS										126	120	123	63	74	71
TRAP INTENSITY										149	95	123	136	148	142
SUPER REFRACTIVE	280	187	467	195	151	346	63	58	61						
HEIGHT BASE										1290	1178	1211	857	822	857
THICKNESS										209	247	216	137	127	134
INTENSITY										47	49	47	21	22	22
SUB REFRACTIVE	246	184	430	187	140	327	35	39	36						
HEIGHT BASE										2168	2348	2229	1163	1055	1211
THICKNESS										234	231	233	161	159	160

Table 15

Statistics of the Discrete Categories of Refraction and Associated Specifying Parameters: September

SEPTEMBER LAT 29.3N TO 34.5N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 42, 12Z= 46, ALL= 88

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	11	3	14	11	3	14	26	6	15	31	64	38	101	98	100
DUCT THICKNESS										184	209	202	98	129	116
TRAP THICKNESS										192	204	199	45	48	51
TRAP INTENSITY										178	135	166	142	100	135
NON-SFC DUCTS	27	35	62	27	34	61	64	73	69						
HEIGHT BASE DUCT										651	585	614	436	423	430
HEIGHT BASE TRAP										833	745	784	419	412	416
DUCT THICKNESS										308	311	311	37	100	94
TRAP THICKNESS										166	144	152	52	66	62
TRAP INTENSITY										187	157	170	156	119	135
SUPER REFRACTIVE	34	27	61	29	23	52	69	50	59						
HEIGHT BASE										1009	1166	1078	831	845	840
THICKNESS										228	206	219	159	161	161
INTENSITY										46	46	46	21	24	22
SUB REFRACTIVE	25	19	44	19	13	32	45	28	36						
HEIGHT BASE										1705	1527	1625	1265	1393	1321
THICKNESS										208	267	233	148	201	175

SEPTEMBER LAT 34.3N TO 37.5N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 69, 12Z= 63, ALL= 132

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	8	1	9	8	1	9	11	1	6	0	0	0	0	0	0
DUCT THICKNESS										91	93	91	36	0	34
TRAP THICKNESS										91	87	91	36	0	34
TRAP INTENSITY										111	37	103	75	0	75
NON-SFC DUCTS	38	27	65	36	27	63	52	42	47						
HEIGHT BASE DUCT										967	1003	966	425	506	462
HEIGHT BASE TRAP										1073	1101	1085	393	485	433
DUCT THICKNESS										247	248	247	95	83	91
TRAP THICKNESS										120	146	131	44	67	56
TRAP INTENSITY										104	85	96	97	125	110
SUPER REFRACTIVE	56	55	111	43	41	84	62	65	63						
HEIGHT BASE										759	1179	967	624	853	775
THICKNESS										221	244	232	125	169	150
INTENSITY										48	51	49	22	22	23
SUB REFRACTIVE	35	29	64	30	23	53	43	36	40						
HEIGHT BASE										1795	2107	1937	1314	1099	1230
THICKNESS										219	200	208	145	135	142

SEPTEMBER LAT 37.5N TO 41.3N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 54, 12Z= 54, ALL= 108

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	3	0	3	3	0	3	5	0	2	0	0	0	0	0	0
DUCT THICKNESS										88	0	88	28	0	28
TRAP THICKNESS										88	0	88	28	0	28
TRAP INTENSITY										38	0	38	21	0	21
NON-SFC DUCTS	13	20	33	18	18	36	33	33	33						
HEIGHT BASE DUCT										993	900	946	657	449	563
HEIGHT BASE TRAP										1403	900	1145	611	427	528
DUCT THICKNESS										242	233	237	97	95	97
TRAP THICKNESS										121	144	133	58	66	65
TRAP INTENSITY										104	58	80	77	56	71
SUPER REFRACTIVE	46	36	82	35	30	65	64	55	60						
HEIGHT BASE										1696	1865	1661	1219	845	1068
THICKNESS										197	208	202	119	136	122
INTENSITY										54	60	57	23	18	22
SUB REFRACTIVE	27	22	49	21	17	38	38	31	35						
HEIGHT BASE										2948	2873	2916	1436	1414	1401
THICKNESS										210	252	229	110	137	123

SEPTEMBER LAT 41.0N TO 46.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, COZ= 106, 12Z= 92, ALL= 198

SURFACE DUCT	NUMBER RPTS 1 OR MORE COZ	12Z	ALL	PERCENT RPTS 1 OR MORE COZ	12Z	ALL	MEANS COZ	12Z	ALL	STANDARD DEVIATIONS COZ	12Z	ALL
HEIGHT BASE TRAP	11	3	14	11	3	14	10	3	7	0	0	0
DUCT THICKNESS							71	56	64	23	36	27
TRAP THICKNESS							71	56	64	23	36	27
TRAP INTENSITY							109	87	105	73	90	76
NON-SFC DUCTS	27	22	49	25	22	47	23	23	23			
HEIGHT BASE DUCT							940	928	935	512	654	574
HEIGHT BASE TRAP							1038	1031	1036	476	631	551
DUCT THICKNESS							216	218	217	66	83	75
TRAP THICKNESS							116	127	121	49	50	49
TRAP INTENSITY							81	71	76	90	65	80
SUPER REFRACTIVE	88	68	156	80	53	113	56	57	57			
HEIGHT BASE							1248	1238	1244	998	774	901
THICKNESS							209	231	218	136	131	135
INTENSITY							48	43	44	21	21	21
SUB REFRACTIVE	46	41	87	42	35	77	39	38	38			
HEIGHT BASE							2235	2298	2265	1236	1229	1232
THICKNESS							236	220	228	159	156	159

SEPTEMBER LAT 46.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, COZ= 35, 12Z= 33, ALL= 68

SURFACE DUCT	NUMBER RPTS 1 OR MORE COZ	12Z	ALL	PERCENT RPTS 1 OR MORE COZ	12Z	ALL	MEANS COZ	12Z	ALL	STANDARD DEVIATIONS COZ	12Z	ALL
HEIGHT BASE TRAP	2	0	2	2	0	2	5	0	2	0	0	0
DUCT THICKNESS							77	0	77	30	0	30
TRAP THICKNESS							77	0	77	30	0	30
TRAP INTENSITY							62	0	62	56	0	56
NON-SFC DUCTS	10	10	20	9	9	18	25	27	26			
HEIGHT BASE DUCT							671	799	685	555	560	557
HEIGHT BASE TRAP							732	799	764	539	555	548
DUCT THICKNESS							169	197	182	79	81	80
TRAP THICKNESS							129	97	113	68	46	60
TRAP INTENSITY							63	65	64	53	31	43
SUPER REFRACTIVE	30	40	70	21	24	45	60	72	66			
HEIGHT BASE							1054	929	977	815	669	745
THICKNESS							162	187	160	82	107	98
INTENSITY							43	55	50	22	20	21
SUB REFRACTIVE	19	20	39	12	11	23	34	33	33			
HEIGHT BASE							2641	1960	2291	1417	1124	1321
THICKNESS							142	140	141	93	75	79

SEPTEMBER LAT 29.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, COZ= 306, 12Z= 288, ALL= 594

SURFACE DUCT	NUMBER RPTS 1 OR MORE COZ	12Z	ALL	PERCENT RPTS 1 OR MORE COZ	12Z	ALL	MEANS COZ	12Z	ALL	STANDARD DEVIATIONS COZ	12Z	ALL
HEIGHT BASE TRAP	35	7	42	35	7	42	11	2	7	0	0	0
DUCT THICKNESS							114	151	116	77	132	90
TRAP THICKNESS							103	123	106	48	81	56
TRAP INTENSITY							122	101	119	137	94	105
NON-SFC DUCTS	121	114	235	115	110	225	37	38	37			
HEIGHT BASE DUCT							864	815	840	516	539	529
HEIGHT BASE TRAP							969	930	950	445	512	480
DUCT THICKNESS							228	254	241	94	100	97
TRAP THICKNESS							143	139	141	64	53	59
TRAP INTENSITY							114	98	106	114	104	110
SUPER REFRACTIVE	254	226	480	198	171	369	61	59	60			
HEIGHT BASE							1159	1227	1191	974	829	909
THICKNESS							205	216	210	130	145	137
INTENSITY							48	50	49	22	21	22
SUB REFRACTIVE	152	131	283	124	99	223	40	34	37			
HEIGHT BASE							2224	2054	2145	1393	1267	1340
THICKNESS							210	215	213	140	153	145

Table 16

Statistics of the Discrete Categories of Refraction and Associated Specifying Parameters: October

OCTOBER LAT 29.0N TO 34.5N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 19, 12Z= 21, ALL= 40

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	5	0	5	5	0	5	26	0	12	0	0	0	0	0	0
DUCT THICKNESS										98	0	98	45	0	45
TRAP THICKNESS										98	0	98	45	0	45
TRAP INTENSITY										201	0	201	34	0	34
NON-SFC DUCTS	15	14	27	14	10	24	73	47	60						
HEIGHT BASE DUCT										960	609	829	1338	277	1060
HEIGHT BASE TRAP										1053	667	928	1314	277	1046
DUCT THICKNESS										227	201	238	121	114	109
TRAP THICKNESS										123	163	170	78	111	95
TRAP INTENSITY										105	189	136	83	373	250
SUPER REFRACTIVE	16	26	42	14	19	33	73	90	82						
HEIGHT BASE										846	945	907	1072	900	915
THICKNESS										250	244	247	166	151	156
INTENSITY										41	41	41	24	21	22
SUB REFRACTIVE	11	16	27	6	11	17	31	52	42						
HEIGHT BASE										2247	1266	1666	1220	1002	1197
THICKNESS										168	155	160	95	97	93

OCTOBER LAT 34.5N TO 37.5N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 58, 12Z= 55, ALL= 113

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	6	3	9	6	3	9	10	5	7	1	0	0	3	0	3
DUCT THICKNESS										65	94	75	30	26	31
TRAP THICKNESS										65	94	75	30	26	31
TRAP INTENSITY										123	21	89	64	6	71
NON-SFC DUCTS	27	26	53	25	24	49	43	43	43						
HEIGHT BASE DUCT										930	1042	985	439	634	546
HEIGHT BASE TRAP										1044	1163	1106	332	574	464
DUCT THICKNESS										237	262	246	108	95	103
TRAP THICKNESS										123	134	129	50	44	52
TRAP INTENSITY										102	124	113	123	107	116
SUPER REFRACTIVE	37	32	69	45	26	71	77	47	62						
HEIGHT BASE										1098	1336	1184	613	689	651
THICKNESS										213	210	212	122	124	123
INTENSITY										50	53	51	22	19	21
SUB REFRACTIVE	40	33	73	26	21	47	44	38	41						
HEIGHT BASE										2018	2070	2042	1070	1105	1085
THICKNESS										246	172	212	177	116	158

OCTOBER LAT 37.5N TO 41.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 55, 12Z= 53, ALL= 108

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	7	3	10	7	3	10	12	5	9	14	0	10	36	0	32
DUCT THICKNESS										114	169	116	98	23	84
TRAP THICKNESS										97	129	106	52	20	67
TRAP INTENSITY										70	95	68	55	30	50
NON-SFC DUCTS	20	18	38	19	17	36	34	32	33						
HEIGHT BASE DUCT										765	839	810	666	495	593
HEIGHT BASE TRAP										668	917	801	632	476	564
DUCT THICKNESS										240	184	213	52	99	87
TRAP THICKNESS										139	156	127	44	59	55
TRAP INTENSITY										79	103	89	59	132	101
SUPER REFRACTIVE	42	36	78	33	30	63	60	56	58						
HEIGHT BASE										995	1257	1114	930	877	915
THICKNESS										202	210	205	122	125	123
INTENSITY										48	43	46	23	24	23
SUB REFRACTIVE	21	28	49	19	20	39	34	37	36						
HEIGHT BASE										1637	1708	1678	1118	1028	1067
THICKNESS										218	207	212	128	127	127

OCTOBER LAT 41.0N TO 46.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 94, 12Z= 75, ALL= 169

SURFACE DUCT	NUMBER RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	5	2	7	5	2	7	5	2	4	0	0	0
DUCT THICKNESS							71	161	96	21	65	57
TRAP THICKNESS							71	161	96	21	65	57
TRAP INTENSITY							35	24	32	28	21	27
NON-SFC DUCTS	11	13	24	11	13	24	12	17	14			
HEIGHT BASE DUCT							1169	1171	1165	731	838	791
HEIGHT BASE TRAP							1229	1247	1239	733	805	773
DUCT THICKNESS							179	193	186	66	88	80
TRAP THICKNESS							108	117	113	57	52	54
TRAP INTENSITY							126	63	87	157	73	124
SUPER REFRACTIVE	74	44	118	59	35	94	65	46	56			
HEIGHT BASE							1082	1163	1112	866	736	821
THICKNESS							204	211	209	112	117	115
INTENSITY							51	51	51	20	24	21
SUB REFRACTIVE	42	28	70	35	23	58	38	31	35			
HEIGHT BASE							2483	2297	2391	1255	999	1161
THICKNESS							204	225	212	105	144	123

OCTOBER LAT 46.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 39, 12Z= 32, ALL= 71

SURFACE DUCT	NUMBER RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	0	1	1	0	1	1	0	3	1	0	0	0
DUCT THICKNESS							0	150	150	0	0	0
TRAP THICKNESS							0	150	150	0	0	0
TRAP INTENSITY							0	170	170	0	0	0
NON-SFC DUCTS	5	6	11	5	6	11	12	18	15			
HEIGHT BASE DUCT							973	1000	988	891	791	838
HEIGHT BASE TRAP							1067	1066	1066	827	789	806
DUCT THICKNESS							228	208	217	90	59	74
TRAP THICKNESS							134	144	139	35	22	32
TRAP INTENSITY							42	61	52	43	68	58
SUPER REFRACTIVE	29	20	49	23	14	37	58	43	52			
HEIGHT BASE							1254	1246	1251	1249	805	1089
THICKNESS							176	225	196	91	104	94
INTENSITY							52	66	53	18	17	20
SUB REFRACTIVE	21	14	35	18	11	29	46	34	40			
HEIGHT BASE							2312	2079	2216	909	1286	1082
THICKNESS							212	246	226	112	138	126

OCTOBER LAT 29.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 261, 12Z= 236, ALL= 497

SURFACE DUCT	NUMBER RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	23	9	32	23	9	32	8	3	6	4	2	3
DUCT THICKNESS										21	0	18
TRAP THICKNESS							87	127	98	65	44	63
TRAP INTENSITY							83	127	96	47	44	51
							104	54	90	78	52	75
NON-SFC DUCTS	79	74	153	74	70	144	28	29	28			
HEIGHT BASE DUCT							938	947	943	823	648	743
HEIGHT BASE TRAP							1041	1041	1041	796	619	716
DUCT THICKNESS							226	229	228	93	102	98
TRAP THICKNESS							126	129	127	59	65	63
TRAP INTENSITY							96	119	103	107	179	147
SUPER REFRACTIVE	218	158	376	174	124	298	66	52	59			
HEIGHT BASE							1075	1193	1125	976	791	861
THICKNESS							207	218	216	119	123	121
INTENSITY							50	49	49	20	21	22
SUB REFRACTIVE	135	119	254	104	86	190	39	36	38			
HEIGHT BASE							2158	1931	2052	1164	1124	1150
THICKNESS							217	199	208	135	130	134

Table 17

Statistics of the Discrete Categories of Refraction and Associated Specifying Parameters: November

NOVEMBER LAT 29.0N TO 34.5N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, DOZ= 35, 12Z= 26, ALL= 61

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
SURFACE DUCT	32	27	59	32	27	59	91	100	97						
HEIGHT BASE TRAP	3	3	6	2	3	5	6	11	8	64	147	115	119	118	123
DUCT THICKNESS										221	287	254	126	131	133
TRAP THICKNESS										137	140	139	39	25	31
TRAP INTENSITY										61	130	95	56	29	57
NON-SFC DUCTS	11	15	26	11	14	25	44	93	49						
HEIGHT BASE DUCT										582	485	526	475	321	396
HEIGHT BASE TRAP										716	647	677	460	276	369
DUCT THICKNESS										268	273	294	111	90	99
TRAP THICKNESS										161	111	132	93	62	81
TRAP INTENSITY										156	221	180	177	186	185
SUPER REFRACTIVE	21	21	42	16	17	33	64	65	64						
HEIGHT BASE										710	620	665	965	673	833
THICKNESS										166	239	202	112	140	133
INTENSITY										49	54	52	22	21	21
SUB REFRACTIVE	8	5	13	5	5	10	20	19	19						
HEIGHT BASE										1542	2402	1873	947	1197	1130
THICKNESS										105	161	128	79	69	80

NOVEMBER LAT 34.5N TO 37.5N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, DOZ= 46, 12Z= 39, ALL= 84

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
SURFACE DUCT	43	37	80	43	37	80	93	95	94						
HEIGHT BASE TRAP	3	2	5	3	2	5	6	5	5	0	163	61	0	163	122
DUCT THICKNESS										60	241	132	18	197	149
TRAP THICKNESS										60	91	72	18	37	32
TRAP INTENSITY										62	165	103	27	116	92
NON-SFC DUCTS	18	13	31	16	13	29	35	33	34						
HEIGHT BASE DUCT										1062	802	965	511	361	474
HEIGHT BASE TRAP										1174	846	1050	507	318	461
DUCT THICKNESS										104	173	189	76	68	85
TRAP THICKNESS										107	91	100	49	56	53
TRAP INTENSITY										113	141	125	97	211	156
SUPER REFRACTIVE	44	35	79	28	26	54	62	66	64						
HEIGHT BASE										921	1078	990	782	870	827
THICKNESS										146	177	160	92	110	101
INTENSITY										53	47	51	24	21	22
SUB REFRACTIVE	20	10	30	18	9	27	40	23	32						
HEIGHT BASE										2099	2570	2253	1359	1315	1364
THICKNESS										159	109	142	106	70	99

NOVEMBER LAT 37.5N TO 41.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, DOZ= 41, 12Z= 32, ALL= 73

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
SURFACE DUCT	37	27	64	37	27	64	90	84	88						
HEIGHT BASE TRAP	1	1	2	1	1	2	2	3	2	0	0	0	0	0	0
DUCT THICKNESS										32	64	48	0	0	16
TRAP THICKNESS										32	64	48	0	0	16
TRAP INTENSITY										315	13	165	0	0	150
NON-SFC DUCTS	10	6	16	9	6	15	21	18	20						
HEIGHT BASE DUCT										1224	860	1055	632	583	636
HEIGHT BASE TRAP										1277	982	1167	624	524	604
DUCT THICKNESS										154	203	180	71	98	88
TRAP THICKNESS										101	121	108	59	57	59
TRAP INTENSITY										49	93	66	46	84	66
SUPER REFRACTIVE	30	22	52	24	17	41	58	53	56						
HEIGHT BASE										1219	1206	1213	921	741	851
THICKNESS										203	230	214	134	100	122
INTENSITY										55	52	54	16	21	18
SUB REFRACTIVE	13	6	19	10	5	15	24	15	20						
HEIGHT BASE										3010	3124	3051	959	1101	1053
THICKNESS										221	259	236	144	174	157

NOVEMBER LAT 41.0N TO 46.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 70, 12Z= 59, ALL= 129

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	3	3	6	3	3	6	4	5	4	0	0	0	0	0	0
DUCT THICKNESS										178	141	124	95	120	106
TRAP THICKNESS										168	141	124	85	120	106
TRAP INTENSITY										61	72	66	59	64	58
NON-SFC DUCTS	11	13	24	11	10	21	15	16	16						
HEIGHT BASE DUCT										853	988	926	358	526	499
HEIGHT BASE TRAP										899	1043	968	353	555	482
DUCT THICKNESS										167	207	213	65	118	99
TRAP THICKNESS										152	132	141	50	63	59
TRAP INTENSITY										27	93	63	17	88	74
SUPER REFRACTIVE	29	31	60	28	24	52	40	40	40						
HEIGHT BASE										989	986	939	718	682	701
THICKNESS										184	216	201	122	131	127
INTENSITY										46	52	49	20	20	20
SUB REFRACTIVE	15	15	30	14	9	23	20	15	17						
HEIGHT BASE										1838	1669	1863	1301	1065	1190
THICKNESS										189	242	215	110	137	128

NOVEMBER LAT 46.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 39, 12Z= 25, ALL= 64

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	2	1	3	2	1	3	5	4	4	0	0	0	0	0	0
DUCT THICKNESS										69	14	87	22	0	41
TRAP THICKNESS										69	14	87	22	0	41
TRAP INTENSITY										62	26	62	75	0	67
NON-SFC DUCTS	3	4	7	3	4	7	7	16	10						
HEIGHT BASE DUCT										647	1207	965	512	663	662
HEIGHT BASE TRAP										712	1224	1016	486	670	646
DUCT THICKNESS										209	149	169	36	27	48
TRAP THICKNESS										124	119	119	10	14	12
TRAP INTENSITY										69	29	40	34	19	31
SUPER REFRACTIVE	20	10	30	17	9	26	43	36	40						
HEIGHT BASE										924	985	911	529	552	560
THICKNESS										209	206	208	134	115	128
INTENSITY										52	43	49	22	23	23
SUB REFRACTIVE	17	5	22	12	5	17	30	20	26						
HEIGHT BASE										2268	2146	2241	869	1123	932
THICKNESS										179	192	182	87	156	107

NOVEMBER LAT 29.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 221, 12Z= 181, ALL= 401

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	12	10	22	11	10	21	5	5	5	21	74	45	70	121	107
DUCT THICKNESS										113	157	140	103	146	134
TRAP THICKNESS										69	123	104	59	74	70
TRAP INTENSITY										86	97	91	87	81	85
NON-SFC DUCTS	53	51	104	30	47	97	22	25	24						
HEIGHT BASE DUCT										933	797	866	554	526	545
HEIGHT BASE TRAP										1017	904	961	539	481	515
DUCT THICKNESS										211	230	218	93	106	101
TRAP THICKNESS										127	112	120	67	61	64
TRAP INTENSITY										85	135	109	109	166	143
SUPER REFRACTIVE	144	119	263	113	93	206	51	51	51						
HEIGHT BASE										946	955	950	817	774	798
THICKNESS										177	210	192	125	123	122
INTENSITY										51	50	51	22	22	21
SUB REFRACTIVE	70	41	111	59	33	92	26	18	22						
HEIGHT BASE										2149	2309	2216	1218	1248	1231
THICKNESS										173	196	182	111	139	122

Table 18

Statistics of the Discrete Categories of Refraction and Associated Specifying Parameters: December

DECEMBER LAT 29.0N TO 34.5N, LONG 121.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, COZ= 48, 12Z= 42, ALL= 90

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL
HEIGHT BASE TRAP	7	9	16	6	9	15	12	21	16	77	75	76	91	86	88
DUCT THICKNESS										215	209	210	94	98	96
TRAP THICKNESS										138	132	134	45	39	44
TRAP INTENSITY										77	85	82	76	59	67
NON-SFC DUCTS	21	22	43	21	22	43	43	52	47						
HEIGHT BASE DUCT										525	759	665	259	486	416
HEIGHT BASE TRAP										640	867	756	232	466	385
DUCT THICKNESS										253	233	239	94	77	89
TRAP THICKNESS										132	146	142	64	48	57
TRAP INTENSITY										114	86	99	105	67	90
SUPER REFRACTIVE	33	42	92	35	33	68	72	78	75						
HEIGHT BASE										926	913	920	1039	1055	1046
THICKNESS										215	198	203	130	86	112
INTENSITY										48	49	48	23	20	23
SUB REFRACTIVE	17	15	32	14	13	27	29	30	30						
HEIGHT BASE										1269	2042	1636	1161	1067	1187
THICKNESS										163	193	177	144	106	129

DECEMBER LAT 34.5N TO 37.5N, LONG 121.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, COZ= 52, 12Z= 42, ALL= 94

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL
HEIGHT BASE TRAP	7	1	8	6	1	7	11	2	7	38	0	33	30	0	95
DUCT THICKNESS										113	251	130	92	0	97
TRAP THICKNESS										76	251	89	39	0	64
TRAP INTENSITY										108	99	101	102	0	97
NON-SFC DUCTS	18	16	34	17	16	33	32	38	35						
HEIGHT BASE DUCT										1148	946	1006	971	386	723
HEIGHT BASE TRAP										1308	983	1074	893	350	707
DUCT THICKNESS										168	160	179	55	67	68
TRAP THICKNESS										109	114	111	53	30	44
TRAP INTENSITY										46	64	54	40	53	48
SUPER REFRACTIVE	33	39	72	31	31	62	59	73	65						
HEIGHT BASE										962	1056	1013	999	548	789
THICKNESS										264	193	226	160	125	147
INTENSITY										40	45	43	22	21	21
SUB REFRACTIVE	17	12	29	13	11	24	25	26	25						
HEIGHT BASE										1981	2185	2058	1371	1717	1512
THICKNESS										102	144	120	114	142	104

DECEMBER LAT 37.5N TO 41.0N, LONG 121.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, COZ= 61, 12Z= 57, ALL= 118

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL	COZ	12Z	ALL
HEIGHT BASE TRAP	5	3	8	5	3	8	8	5	6	0	0	0	0	0	0
DUCT THICKNESS										121	75	102	39	18	41
TRAP THICKNESS										121	71	102	39	15	41
TRAP INTENSITY										58	87	90	84	39	71
NON-SFC DUCTS	15	12	27	15	12	27	24	21	22						
HEIGHT BASE DUCT										915	870	866	415	390	409
HEIGHT BASE TRAP										1071	868	942	393	364	386
DUCT THICKNESS										240	158	186	68	87	80
TRAP THICKNESS										129	95	111	51	52	53
TRAP INTENSITY										71	49	61	66	53	62
SUPER REFRACTIVE	30	42	92	42	36	78	68	83	84						
HEIGHT BASE										1060	770	895	923	696	847
THICKNESS										169	144	157	114	117	110
INTENSITY										47	49	47	21	25	23
SUB REFRACTIVE	18	17	35	13	14	27	21	24	22						
HEIGHT BASE										2364	2102	2276	1358	1360	1365
THICKNESS										161	262	210	127	117	132

DECEMBER LAT 41.0N TO 46.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 73, 12Z= 49, ALL= 119

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	2	1	3	2	1	3	2	2	2	0	0	0	0	0	0
DUCT THICKNESS										86	92	88	16	0	14
TRAP THICKNESS										86	92	88	16	0	14
TRAP INTENSITY										19	238	92	12	0	104
NON-SFC DUCTS	5	4	9	5	4	9	7	8	7						
HEIGHT BASE DUCT										450	837	619	168	571	443
HEIGHT BASE TRAP										686	820	744	181	558	428
DUCT THICKNESS										210	126	176	77	66	69
TRAP THICKNESS										142	116	131	50	51	51
TRAP INTENSITY										76	27	51	41	26	41
SUPER REFRACTIVE	45	29	74	38	21	59	54	42	49						
HEIGHT BASE										1227	848	1076	775	894	844
THICKNESS										164	202	195	98	68	98
INTENSITY										66	52	54	21	22	21
SUB REFRACTIVE	13	10	23	13	10	23	18	20	19						
HEIGHT BASE										2161	1843	2029	1203	851	1075
THICKNESS										219	191	201	137	100	123

DECEMBER LAT 46.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 40, 12Z= 29, ALL= 78

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	2	0	2	2	0	2	4	0	2	0	0	0	0	0	0
DUCT THICKNESS										106	0	106	96	0	96
TRAP THICKNESS										106	0	106	96	0	96
TRAP INTENSITY										84	0	84	63	0	63
NON-SFC DUCTS	5	5	10	5	5	10	10	17	12						
HEIGHT BASE DUCT										854	859	856	292	314	321
HEIGHT BASE TRAP										730	580	655	244	321	292
DUCT THICKNESS										223	148	188	48	89	77
TRAP THICKNESS										137	90	113	47	53	77
TRAP INTENSITY										105	44	74	83	36	72
SUPER REFRACTIVE	19	5	24	17	5	22	34	17	28						
HEIGHT BASE										1121	668	1027	745	592	739
THICKNESS										146	129	141	100	41	93
INTENSITY										44	58	47	25	24	26
SUB REFRACTIVE	12	5	17	10	4	14	20	13	17						
HEIGHT BASE										1664	1665	1661	1050	835	1000
THICKNESS										161	161	161	101	102	101

DECEMBER LAT 29.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 28, 12Z= 219, ALL= 499

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	23	14	37	21	14	35	7	6	7	55	49	45	77	78	78
DUCT THICKNESS										143	172	154	93	101	97
TRAP THICKNESS										118	104	114	52	59	54
TRAP INTENSITY										79	84	80	86	69	80
NON-SFC DUCTS	64	59	123	63	59	122	22	26	24						
HEIGHT BASE DUCT										756	829	807	610	437	535
HEIGHT BASE TRAP										864	894	884	569	417	542
DUCT THICKNESS										214	185	200	94	80	87
TRAP THICKNESS										155	122	139	62	50	57
TRAP INTENSITY										81	57	70	80	58	71
SUPER REFRACTIVE	187	187	374	163	126	289	58	67	57						
HEIGHT BASE										1267	872	977	927	824	887
THICKNESS										215	180	198	150	107	117
INTENSITY										48	48	48	22	22	22
SUB REFRACTIVE	77	89	166	63	52	115	22	23	23						
HEIGHT BASE										1866	2068	1959	1272	1174	1234
THICKNESS										155	195	172	130	115	124

Table 19

Statistics of the Discrete Categories of Refraction and Associated Specifying Parameters: All Months

ALL MONTHS LAT 29.0N TO 34.5N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 515, 12Z= 455, ALL= 970

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	89	29	98	87	29	96	13	6	9	82	70	80	97	105	101
DUCT THICKNESS										165	200	198	103	115	106
TRAP THICKNESS										145	150	148	47	51	49
TRAP INTENSITY										129	121	127	109	71	99
NON-SFC DUCTS	305	259	564	283	238	521	54	52	53						
HEIGHT BASE DUCT										756	749	768	647	524	595
HEIGHT BASE TRAP										520	462	498	520	464	506
DUCT THICKNESS										240	259	256	105	109	105
TRAP THICKNESS										137	141	139	69	77	73
TRAP INTENSITY										134	120	128	174	164	170
SUPER REFRACTIVE	429	378	807	326	300	626	63	65	64						
HEIGHT BASE										967	1065	1027	890	906	900
THICKNESS										203	212	207	140	134	138
INTENSITY										46	48	47	22	21	22
SUB REFRACTIVE	225	212	437	176	160	336	34	35	34						
HEIGHT BASE										1774	1940	1855	1234	1283	1245
THICKNESS										218	210	210	170	149	161

ALL MONTHS LAT 34.5N TO 37.5N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 785, 12Z= 713, ALL=1502

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	77	19	96	75	18	93	9	2	6	8	25	11	49	75	56
DUCT THICKNESS										65	126	69	113	80	80
TRAP THICKNESS										87	101	90	40	63	45
TRAP INTENSITY										88	71	85	84	66	81
NON-SFC DUCTS	323	259	582	308	245	553	39	34	36						
HEIGHT BASE DUCT										945	925	936	531	561	545
HEIGHT BASE TRAP										1043	1020	1033	511	539	520
DUCT THICKNESS										206	211	208	88	92	90
TRAP THICKNESS										138	128	133	56	58	56
TRAP INTENSITY										94	93	93	113	133	123
SUPER REFRACTIVE	676	577	1246	510	455	965	64	63	64						
HEIGHT BASE										989	1164	1069	771	728	757
THICKNESS										197	207	201	120	127	124
INTENSITY										46	49	48	24	22	22
SUB REFRACTIVE	327	282	609	251	230	481	31	32	32						
HEIGHT BASE										1867	2118	1999	1121	1144	1175
THICKNESS										191	200	195	128	148	138

ALL MONTHS LAT 37.5N TO 41.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, 00Z= 726, 12Z= 655, ALL=1381

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL	00Z	12Z	ALL
HEIGHT BASE TRAP	54	15	69	54	15	69	7	2	4	4	11	6	22	44	28
DUCT THICKNESS										64	103	86	64	57	62
TRAP THICKNESS										60	51	55	52	44	51
TRAP INTENSITY										77	82	78	85	83	84
NON-SFC DUCTS	183	150	333	174	145	319	23	22	23						
HEIGHT BASE DUCT										927	959	941	544	536	541
HEIGHT BASE TRAP										1015	1034	1020	520	518	520
DUCT THICKNESS										207	188	197	82	85	84
TRAP THICKNESS										143	147	145	58	55	56
TRAP INTENSITY										85	69	78	158	100	135
SUPER REFRACTIVE	578	468	1046	450	374	824	61	57	59						
HEIGHT BASE										1006	1227	1108	917	866	901
THICKNESS										194	197	195	119	114	112
INTENSITY										49	49	49	23	22	22
SUB REFRACTIVE	295	251	546	228	188	416	31	28	30						
HEIGHT BASE										2146	2194	2170	1231	1209	1049
THICKNESS										224	216	208	143	127	135

ALL MONTHS LAT 41.0N TO 46.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, CCZ=1110, 12Z= 932, ALL=2050

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL
HEIGHT BASE TRAP	53	19	72	53	19	72	4	2	3	6	8	7	33	35	33
DUCT THICKNESS										88	104	95	59	104	76
TRAP THICKNESS										82	104	92	44	97	65
TRAP INTENSITY										87	99	76	62	122	83
NON-SFC DUCTS	178	151	329	171	142	313	15	15	15						
HEIGHT BASE DUCT										1043	1011	1029	699	705	701
HEIGHT BASE TRAP										1109	1073	1093	684	686	683
DUCT THICKNESS										176	193	182	57	79	70
TRAP THICKNESS										146	117	112	48	82	49
TRAP INTENSITY										86	92	89	231	187	212
SUPER REFRACTIVE	763	532	1295	600	430	1030	53	46	50						
HEIGHT BASE										1119	1206	1154	877	838	863
THICKNESS										197	210	200	118	116	118
INTENSITY										51	51	51	20	20	20
SUB REFRACTIVE	420	313	733	340	259	599	30	27	29						
HEIGHT BASE										2226	2196	2212	1256	1219	1241
THICKNESS										244	216	209	130	146	137

ALL MONTHS LAT 46.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, CCZ= 583, 12Z= 4[illegible], ALL=1017

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL
HEIGHT BASE TRAP	30	8	38	30	8	38	5	1	3	26	25	26	16	58	29
DUCT THICKNESS										68	103	76	40	76	76
TRAP THICKNESS										74	142	86	36	29	44
TRAP INTENSITY										88	78	85	87	54	84
NON-SFC DUCTS	48	51	99	46	49	95	7	11	9						
HEIGHT BASE DUCT										944	1046	997	703	905	814
HEIGHT BASE TRAP										1014	1115	1068	691	858	801
DUCT THICKNESS										150	172	176	77	94	81
TRAP THICKNESS										124	140	106	54	49	51
TRAP INTENSITY										76	88	82	117	117	117
SUPER REFRACTIVE	303	264	567	254	159	413	43	35	40						
HEIGHT BASE										905	931	915	856	787	829
THICKNESS										171	165	181	123	119	110
INTENSITY										49	54	51	22	21	22
SUB REFRACTIVE	185	123	287	132	95	227	22	21	22						
HEIGHT BASE										2070	2012	2046	1220	1150	1206
THICKNESS										184	168	180	120	138	128

ALL MONTHS LAT 29.0N TO 51.0N, LONG 120.0W TO 140.0W NUMBER OF REPORTS FOR LAT ZONE, CCZ=3733, 12Z=3189, ALL=6922

	NUMBER			NUMB RPTS 1 OR MORE			PERCENT RPTS 1 OR MORE			MEANS			STANDARD DEVIATIONS		
SURFACE DUCT	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL	CCZ	12Z	ALL
HEIGHT BASE TRAP	293	87	380	279	87	366	7	2	5	16	37	20	63	87	68
DUCT THICKNESS										115	159	126	87	113	96
TRAP THICKNESS										69	143	105	51	70	58
TRAP INTENSITY										92	96	93	91	87	90
NON-SFC DUCTS	1137	869	1918	982	819	1801	26	25	26						
HEIGHT BASE DUCT										912	900	907	615	609	611
HEIGHT BASE TRAP										1006	968	1001	590	594	597
DUCT THICKNESS										237	207	217	93	97	95
TRAP THICKNESS										161	165	162	58	63	62
TRAP INTENSITY										102	97	100	166	149	158
SUPER REFRACTIVE	2749	2150	4899	2140	1718	3858	57	63	55						
HEIGHT BASE										1018	1154	1076	864	829	852
THICKNESS										164	204	179	120	127	120
INTENSITY										48	50	49	23	21	22
SUB REFRACTIVE	1423	1179	2602	1167	932	2099	30	29	29						
HEIGHT BASE										2045	2147	2078	1245	1212	1230
THICKNESS										202	206	204	173	142	160

Table 20
Number of Profiles Exhibiting Different Combinations of Refractive Conditions

Number of ducts, super-refractive, or sub-refractive layers	0	1	2	3	4	5	6
Number of profiles with indicated number of ducts	4849	1880	184	8	1	0	0
Number of profiles with indicated number of super-refractive layers	3064	2947	792	110	7	2	0
Number of profiles with indicated number of sub-refractive layers	4863	1614	368	60	14	2	1

Combination Number of Ducts, Super-Refractive Layers and Sub-Refractive Layers with Number of Profiles of Each Combination

0 DUCTS

SUB	NUMBER OF SUPER LAYERS						
	0	1	2	3	4	5	6
0	1918	1414	299	32	4	0	0
1	258	522	162	23	1	0	0
2	31	81	61	10	1	0	0
3	4	11	12	2	0	0	0
4	0	2	1	1	0	1	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0

NUMBER OF SOUNDINGS

1 DUCT

SUB	NUMBER OF SUPER LAYERS						
	0	1	2	3	4	5	6
0	512	483	116	5	0	0	0
1	215	264	81	17	1	0	0
2	48	79	21	9	0	0	0
3	2	11	5	4	0	0	0
4	0	2	2	2	0	0	0
5	0	0	0	0	0	1	0
6	0	0	0	0	0	0	0

NUMBER OF SOUNDINGS

2 DUCTS

SUB	NUMBER OF SUPER LAYERS						
	0	1	2	3	4	5	6
0	34	28	15	0	0	0	0
1	32	24	12	2	0	0	0
2	8	16	1	1	0	0	0
3	2	3	2	1	0	0	0
4	0	2	0	0	0	0	0
5	0	0	0	1	0	0	0
6	0	0	0	0	0	0	0

NUMBER OF SOUNDINGS

3 DUCTS

SUB	NUMBER OF SUPER LAYERS						
	0	1	2	3	4	5	6
0	1	3	1	0	0	0	0
1	0	0	0	0	0	0	0
2	0	1	0	0	0	0	0
3	0	1	0	0	0	0	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	1	0	0	0	0

NUMBER OF SOUNDINGS

The one profile with 4 ducts had no super-refractive layers and four sub-refractive layers.

Table 21

Distribution of Parameter S by
Latitude Zone and Season: 00Z Reports

LATITUDE 29.0N-34.5N

	00Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	64	20	3	2	0	4	93	W	69	21	3	2	0	4
SPRING	93	33	14	16	4	4	170	S	54	22	8	9	2	2
SUMMER	64	50	15	7	1	9	146	S	43	34	10	4	0	6
FALL	34	26	19	7	7	1	94	F	43	27	19	7	7	1

LATITUDE 34.5N-37.5N

	00Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	142	27	13	8	2	0	193	W	73	13	6	4	1	0
SPRING	164	30	13	21	1	1	236	S	69	12	5	8	0	0
SUMMER	103	47	6	11	4	0	173	S	59	27	4	6	2	0
FALL	98	24	10	6	1	0	139	F	70	17	7	4	0	0

LATITUDE 37.5N-41.0N

	00Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	138	35	14	8	0	0	195	W	71	17	7	4	0	0
SPRING	142	32	16	12	0	0	201	S	70	16	7	5	0	0
SUMMER	110	23	7	5	1	0	146	S	75	15	4	3	0	0
FALL	98	22	9	8	1	0	138	F	71	15	6	5	0	0

LATITUDE 41.0N-46.0N

	00Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	188	27	14	10	1	0	240	W	78	11	5	4	0	0
SPRING	283	39	8	7	0	0	337	S	83	11	2	2	0	0
SUMMER	214	28	9	8	1	0	260	S	82	10	3	3	0	0
FALL	158	20	11	4	2	0	195	F	81	10	5	2	1	0

LATITUDE 46.0N-51.0N

	00Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	115	11	5	1	0	0	132	W	87	8	3	0	0	0
SPRING	124	16	8	8	0	0	156	S	79	10	5	5	0	0
SUMMER	101	18	11	5	0	0	135	S	74	13	8	3	0	0
FALL	86	12	5	1	0	0	102	F	84	11	0	0	0	0

LATITUDE 29.0N-51.0N

	00Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	647	120	49	30	5	4	855	W	75	14	5	3	0	0
SPRING	806	155	64	64	5	5	1100	S	72	14	5	5	0	0
SUMMER	592	164	51	37	7	8	859	S	68	18	5	4	0	1
FALL	478	104	48	25	11	2	668	F	71	15	7	3	1	0

Table 22

Distribution of Parameter S by
Latitude Zone and Season: 12Z Reports

LATITUDE 29.0N-34.5N

	12Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	58	0	6	0	2	3	69	W	65	22	6	0	2	3
SPRING	84	19	10	0	6	2	135	S	65	21	7	0	4	1
SUMMER	82	34	23	9	4	4	156	S	52	21	14	5	2	2
FALL	38	3	15	3	1	1	67	F	43	26	17	10	1	1

LATITUDE 34.0N-37.5N

	12Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	164	1	11	5	0	0	211	W	77	14	5	2	0	0
SPRING	168	44	9	8	1	1	231	S	72	19	3	3	0	0
SUMMER	114	29	5	8	0	0	157	S	68	23	3	4	0	0
FALL	105	5	9	12	2	0	152	F	69	16	5	7	1	0

LATITUDE 37.5N-41.0N

	12Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	145	6	5	5	2	1	185	W	79	14	3	1	1	1
SPRING	161	19	13	7	3	1	204	S	80	7	6	3	1	1
SUMMER	111	33	4	6	0	0	154	S	72	20	5	3	0	0
FALL	113	2	18	12	0	1	146	F	68	15	11	5	0	1

LATITUDE 41.0N-45.0N

	12Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	193	0	9	5	0	1	217	W	84	3	4	2	0	1
SPRING	259	42	4	11	1	0	317	S	81	13	1	3	0	0
SUMMER	226	31	7	11	1	0	256	S	84	7	2	4	0	0
FALL	164	5	3	10	0	0	217	F	75	16	3	4	1	0

LATITUDE 45.0N-51.0N

	12Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	93	7	1	1	1	0	103	W	90	6	1	1	1	0
SPRING	115	1	13	4	0	1	134	S	72	13	8	3	1	1
SUMMER	93	19	10	5	0	1	128	S	72	15	8	4	1	1
FALL	97	7	8	4	0	1	117	F	83	6	2	3	0	0

LATITUDE 29.0N-51.0N

	12Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	653	14	33	14	5	4	723	W	90	12	4	1	0	1
SPRING	789	171	69	36	11	4	1079	S	75	14	4	3	1	1
SUMMER	625	116	54	39	5	4	843	S	71	15	5	4	0	0
FALL	514	112	62	46	3	3	739	F	70	15	7	6	0	1

Table 23

Distribution of Parameter D by
Latitude Zone and Season: 00Z Reports

LATITUDE 29.0N-34.5N

	00Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	16	16	15	29	16	7	99	W	16	17	15	31	17	7
SPRING	15	35	31	55	23	14	173	S	9	20	18	32	11	8
SUMMER	6	15	13	36	44	33	146	S	4	8	9	26	29	22
FALL	9	14	15	25	22	9	94	F	9	14	15	26	23	9

LATITUDE 34.5N-37.5N

	00Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	43	46	37	50	15	2	193	W	22	23	19	25	7	1
SPRING	46	50	42	68	22	7	235	S	20	21	17	28	8	2
SUMMER	15	35	18	61	35	9	173	S	8	20	10	35	20	5
FALL	27	38	23	38	14	7	139	F	19	21	16	27	10	5

LATITUDE 37.5N-41.0N

	00Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	61	52	39	36	7	0	185	W	31	26	20	18	3	0
SPRING	74	55	36	32	9	1	211	S	35	27	17	14	2	1
SUMMER	29	32	23	35	15	6	140	S	19	21	19	23	10	4
FALL	43	33	21	30	11	1	139	F	31	23	15	21	7	1

LATITUDE 41.0N-46.0N

	00Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	95	66	37	36	3	2	240	W	40	27	15	15	1	1
SPRING	154	87	44	44	7	1	337	S	46	25	13	13	2	0
SUMMER	95	69	34	49	12	0	259	S	36	26	13	18	4	0
FALL	78	66	29	13	9	1	195	F	38	33	14	6	5	0

LATITUDE 46.0N-51.0N

	00Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	32	25	11	6	0	1	182	W	64	17	8	3	1	0
SPRING	89	34	14	17	1	0	256	S	54	21	12	10	2	0
SUMMER	57	39	14	22	2	1	155	S	42	28	10	16	1	1
FALL	52	27	13	8	2	1	102	F	51	26	10	7	1	0

LATITUDE 29.0N-51.0N

	00Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	302	233	184	196	41	12	968	W	35	23	16	18	4	1
SPRING	376	261	172	214	55	22	1100	S	44	26	15	19	5	2
SUMMER	252	188	107	235	108	49	939	S	23	21	12	23	12	5
FALL	227	170	101	119	54	17	688	F	34	25	15	17	8	2

Table 24

Distribution of Parameter D by Latitude Zone and Season: 12Z Reports

LATITUDE 29.0N-34.5N

	12Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	14	9	14	23	12	7	99	W	15	21	15	25	13	7
SPRING	19	19	32	36	22	7	135	S	14	14	23	26	16	5
SUMMER	8	3	17	55	31	35	156	S	5	6	10	35	19	22
FALL	6	9	19	30	16	7	87	F	6	10	21	34	18	8

LATITUDE 34.5N-37.5N

	12Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	57	51	31	54	14	4	211	W	27	24	14	25	6	1
SPRING	49	61	44	50	20	7	231	S	21	26	19	21	8	3
SUMMER	18	40	32	52	16	7	167	S	10	23	19	31	10	4
FALL	31	4	25	53	16	3	132	F	20	15	18	34	10	1

LATITUDE 37.5N-41.0N

	12Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	50	41	30	43	8	1	133	W	32	22	16	23	4	1
SPRING	74	65	29	35	6	1	210	S	37	27	14	17	3	1
SUMMER	22	43	33	39	12	3	158	S	13	27	24	24	7	1
FALL	38	7	35	43	6	2	131	F	28	22	21	26	3	1

LATITUDE 41.0N-46.0N

	12Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	93	7	34	35	7	1	217	W	42	21	15	15	3	0
SPRING	141	76	43	44	9	4	317	S	44	23	13	13	2	1
SUMMER	82	6	57	47	10	1	206	S	39	23	19	17	3	0
FALL	96	9	23	38	4	2	217	F	44	22	12	17	1	0

LATITUDE 46.0N-51.0N

	12Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	73	9	6	4	1	1	165	W	73	18	5	3	0	0
SPRING	78	37	23	15	1	2	156	S	50	23	14	9	0	1
SUMMER	49	2	21	18	4	1	124	S	39	25	16	14	3	0
FALL	54	2	8	22	0	2	112	F	51	19	7	19	0	1

LATITUDE 29.0N-51.0N

	12Z NUMBER OF PROFILES							PERCENT OF PROFILES						
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS
WINTER	287	177	115	159	42	13	813	W	36	22	14	19	5	1
SPRING	361	243	171	160	58	21	1039	S	34	23	16	17	5	2
SUMMER	179	91	154	211	75	47	871	S	20	23	18	24	8	5
FALL	229	141	115	186	42	16	729	F	31	19	16	25	5	2

Table 25

Comparison of the Distributions of
Parameter S in Adjacent Latitude Zones

LATITUDE 34.5N-37.5N NUMBER PROFILES							
	N	SW	SS	DW	DM	DS	TOT
N	175	32	3	17	3	0	230
SW	83	19	8	5	2	0	117
29.0N SS	23	12	5	2	0	0	42
34.5N DW	21	5	1	3	0	0	30
DM	10	4	0	2	0	0	16
DS	10	5	1	0	0	0	16

34.5N-37.5N PERCENT						
	N	SW	SS	DW	DM	DS
N	76	13	1	7	1	0
SW	70	16	6	4	1	0
29.0N SS	54	28	11	4	0	0
34.5N DW	70	16	3	10	0	0
DM	62	25	0	12	0	0
DS	62	31	6	0	0	0

LATITUDE 37.5N-41.0N NUMBER PROFILES							
	N	SW	SS	DW	DM	DS	TOT
N	289	56	17	11	0	1	374
SW	58	16	10	5	2	0	91
34.5N SS	25	4	3	2	1	0	35
37.5N DW	12	3	4	4	0	0	23
DM	2	1	0	0	0	0	3
DS	1	1	0	0	0	0	2

37.5N-41.0N PERCENT						
	N	SW	SS	DW	DM	DS
N	77	14	4	2	0	0
SW	63	17	10	5	2	0
34.5N SS	71	11	8	5	2	0
37.5N DW	52	13	17	17	0	0
DM	66	33	0	0	0	0
DS	50	50	0	0	0	0

LATITUDE 41.0N-46.0N NUMBER PROFILES							
	N	SW	SS	DW	DM	DS	TOT
N	400	35	11	15	0	0	461
SW	77	11	3	4	0	0	95
37.5N SS	27	11	3	1	0	0	42
41.0N DW	13	7	1	0	0	0	21
DM	2	2	0	0	0	0	4
DS	1	0	0	0	0	0	1

41.0N-46.0N PERCENT						
	N	SW	SS	DW	DM	DS
N	86	7	2	3	0	0
SW	81	11	3	4	0	0
37.5N SS	64	26	7	2	0	0
41.0N DW	61	33	4	0	0	0
DM	50	50	0	0	0	0
DS	100	0	0	0	0	0

LATITUDE 46.0N-51.0N NUMBER PROFILES							
	N	SW	SS	DW	DM	DS	TOT
N	286	31	18	9	1	1	346
SW	36	11	4	3	0	0	54
41.0N SS	10	3	3	0	0	0	16
46.0N DW	9	2	1	2	0	0	14
DM	0	1	0	0	0	0	1
DS	1	0	0	0	0	0	1

46.0N-51.0N PERCENT						
	N	SW	SS	DW	DM	DS
N	82	8	5	2	0	0
SW	66	20	7	5	0	0
41.0N SS	62	18	18	0	0	0
46.0N DW	64	14	7	14	0	0
DM	0	100	0	0	0	0
DS	0	0	0	0	0	0

Table 26

Comparison of the Distributions of
Parameter S in Adjacent Latitude Zones

LATITUDE 29.0N-34.5N	NUMBER PROFILES						
	N	SW	SS	DW	DM	DS	TOT
N	175	83	23	21	10	10	322
SW	32	19	12	5	4	5	77
34.5N SS	3	8	5	1	0	1	18
37.5N DW	17	5	2	3	2	0	29
DM	3	2	0	0	0	0	5
DS	0	0	0	0	0	0	0

29.0N-34.5N	PERCENT					
	N	SW	SS	DW	DM	DS
N	54	25	7	6	3	3
SW	41	24	15	6	5	6
34.5N SS	16	44	27	5	0	5
37.5N DW	58	17	6	10	6	0
DM	60	40	0	0	0	0
DS	0	0	0	0	0	0

LATITUDE 34.5N-37.5N	NUMBER PROFILES						
	N	SW	SS	DW	DM	DS	TOT
N	289	56	25	12	2	1	387
SW	56	16	4	3	1	1	81
37.5N SS	17	10	3	4	0	0	34
41.0N DW	11	5	2	4	0	0	22
DM	0	2	1	0	0	0	3
DS	1	0	0	0	0	0	1

34.5N-37.5N	PERCENT					
	N	SW	SS	DW	DM	DS
N	74	14	6	3	0	0
SW	69	19	4	3	1	1
37.5N SS	50	29	8	11	0	0
41.0N DW	50	22	9	18	0	0
DM	0	66	33	0	0	0
DS	100	0	0	0	0	0

LATITUDE 37.5N-41.0N	NUMBER PROFILES						
	N	SW	SS	DW	DM	DS	TOT
N	400	77	27	13	2	1	520
SW	35	11	11	7	2	0	66
41.0N SS	11	3	3	1	0	0	18
46.0N DW	15	4	1	0	0	0	20
DM	0	0	0	0	0	0	0
DS	0	1	0	0	0	0	0

37.5N-41.0N	PERCENT					
	N	SW	SS	DW	DM	DS
N	76	14	5	2	0	0
SW	53	16	16	10	3	0
41.0N SS	61	16	16	5	0	0
46.0N DW	75	20	5	0	0	0
DM	0	0	0	0	0	0
DS	0	0	0	0	0	0

LATITUDE 41.0N-46.0N	NUMBER PROFILES						
	N	SW	SS	DW	DM	DS	TOT
N	286	36	10	9	0	0	341
SW	31	11	3	2	1	0	48
46.0N SS	18	4	3	1	0	0	26
51.0N DW	9	3	0	2	0	0	14
DM	1	0	0	0	0	0	1
DS	1	0	0	0	0	0	1

41.0N-46.0N	PERCENT					
	N	SW	SS	DW	DM	DS
N	83	10	2	2	0	0
SW	64	22	6	4	2	0
46.0N SS	69	15	11	3	0	0
51.0N DW	64	21	0	14	0	0
DM	100	0	0	0	0	0
DS	100	0	0	0	0	0

Table 27

Comparison of the Distributions of
Parameter D in Adjacent Latitude Zones

LATITUDE 34.5N-37.5N NUMBER PROFILES

		N	SW	SS	CW	CM	CS	TOT
	N	19	7	2	5	2	0	35
	SW	13	16	12	10	0	1	52
29.0N	SS	18	17	13	20	5	0	73
34.5N	CW	19	21	28	47	7	1	123
	CM	3	23	14	38	15	5	98
	CS	3	16	10	26	13	2	70

34.5N-37.5N PERCENT

		N	SW	SS	CW	CM	CS
	N	54	20	5	14	5	0
	SW	25	30	23	19	0	1
29.0N	SS	24	23	17	27	6	0
34.5N	CW	15	17	22	38	5	0
	CM	3	23	14	38	15	5
	CS	4	22	14	37	18	2

LATITUDE 37.5N-41.0N NUMBER PROFILES

		N	SW	SS	CW	CM	CS	TOT
	N	55	30	12	19	0	0	116
	SW	41	28	19	20	1	0	109
34.5N	SS	27	22	16	20	4	0	89
37.5N	CW	29	37	35	41	12	4	158
	CM	6	9	8	13	6	0	42
	CS	2	4	2	3	2	1	14

37.5N-41.0N PERCENT

		N	SW	SS	CW	CM	CS
	N	47	25	10	16	0	0
	SW	37	25	17	18	0	0
34.5N	SS	30	24	17	22	4	0
37.5N	CW	18	23	22	25	7	2
	CM	14	21	19	30	14	0
	CS	14	28	14	21	14	7

LATITUDE 41.0N-46.0N NUMBER PROFILES

		N	SW	SS	CW	CM	CS	TOT
	N	122	27	17	10	0	0	176
	SW	68	37	26	23	2	0	156
37.5N	SS	40	36	20	18	2	0	116
41.0N	CW	33	46	29	19	6	2	135
	CM	6	6	4	14	4	0	34
	CS	1	2	0	3	1	0	7

41.0N-46.0N PERCENT

		N	SW	SS	CW	CM	CS
	N	69	15	9	5	0	0
	SW	43	23	16	14	1	0
37.5N	SS	34	31	17	15	1	0
41.0N	CW	24	34	21	14	4	1
	CM	17	17	11	41	11	0
	CS	14	28	0	42	14	0

LATITUDE 46.0N-51.0N NUMBER PROFILES

		N	SW	SS	CW	CM	CS	TOT
	N	96	33	9	13	2	2	155
	SW	64	26	12	8	0	0	110
41.0N	SS	31	24	10	6	0	1	72
46.0N	CW	24	19	12	17	1	1	74
	CM	5	8	1	4	2	0	20
	CS	0	0	0	0	0	0	0

46.0N-51.0N PERCENT

		N	SW	SS	CW	CM	CS
	N	61	21	6	8	1	1
	SW	58	23	10	7	0	0
41.0N	SS	43	33	13	8	0	1
46.0N	CW	32	25	16	22	1	1
	CM	25	40	5	20	10	0
	CS	0	0	0	0	0	0

Table 28

Comparison of the Distributions of
Parameter D in Adjacent Latitude Zones

LATITUDE 29.0N-34.5N NUMBER PROFILES

		N	SW	SS	DW	DM	DS	TOT
	N	19	13	18	19	3	3	75
	SW	7	16	17	21	23	16	100
34.5N	SS	2	12	13	28	14	10	79
37.5N	DW	5	10	20	47	38	26	146
	DM	2	0	5	7	15	13	42
	DS	0	1	0	1	5	2	9

29.0N-34.5N PERCENT

		N	SW	SS	DW	DM	DS
	N	25	17	24	25	4	4
	SW	7	16	17	21	23	16
34.5N	SS	2	15	16	35	17	12
37.5N	DW	3	6	13	32	26	17
	DM	4	0	11	16	35	30
	DS	0	11	0	11	55	22

LATITUDE 34.5N-37.5N NUMBER PROFILES

		N	SW	SS	DW	DM	DS	TOT
	N	55	41	27	29	6	2	160
	SW	30	28	22	37	9	4	130
37.5N	SS	12	19	16	35	8	2	92
41.0N	DW	19	20	20	41	13	3	116
	DM	0	1	4	12	6	2	25
	DS	0	0	0	4	0	1	5

34.5N-37.5N PERCENT

		N	SW	SS	DW	DM	DS
	N	34	25	16	18	3	1
	SW	23	21	16	28	6	3
37.5N	SS	13	20	17	38	8	2
41.0N	DW	16	17	17	35	11	2
	DM	0	4	16	48	24	8
	DS	0	0	0	80	0	20

LATITUDE 37.5N-41.0N NUMBER PROFILES

		N	SW	SS	DW	DM	DS	TOT
	N	122	68	40	33	6	1	270
	SW	27	37	36	46	6	2	154
41.0N	SS	17	26	20	29	4	0	96
46.0N	DW	10	23	18	19	14	3	87
	DM	1	2	2	6	4	1	16
	DS	0	0	0	2	0	0	2

37.5N-41.0N PERCENT

		N	SW	SS	DW	DM	DS
	N	45	25	14	12	2	0
	SW	17	24	23	29	3	1
41.0N	SS	17	27	20	30	4	0
46.0N	DW	11	26	20	21	16	3
	DM	0	13	13	40	26	6
	DS	0	0	0	100	0	0

LATITUDE 41.0N-46.0N NUMBER PROFILES

		N	SW	SS	DW	DM	DS	TOT
	N	96	54	31	24	5	0	220
	SW	33	26	24	19	8	0	110
46.0N	SS	9	12	10	12	1	0	44
51.0N	DW	13	8	6	17	4	0	48
	DM	2	0	0	1	2	0	5
	DS	2	0	1	1	0	0	4

41.0N-46.0N PERCENT

		N	SW	SS	DW	DM	DS
	N	43	29	14	10	2	0
	SW	30	23	21	17	7	0
46.0N	SS	20	27	22	27	2	0
51.0N	DW	27	16	12	35	8	0
	DM	40	0	0	20	40	0
	DS	50	0	25	25	0	0

Table 29

Change in Distribution of Parameter S in 12 Hours from 00Z: January-March

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	41	5	1	0	0	0	47	N	87	12	3	0	0	0	N100	12	0	0	0	0
0 SW	3	5	0	0	0	1	10	SW	30	60	0	0	0	10	SW100	70	10	10	10	10
0 SS	1	2	1	0	0	0	4	SS	25	50	25	0	0	0	SS100	75	25	0	0	0
Z DW	0	0	1	0	0	0	1	DW	0	0	100	0	0	0	DW100	100	100	0	0	0
DM	0	1	0	0	0	0	1	DM	0	100	0	0	0	0	DM100	100	0	0	0	0
DS	2	0	1	0	0	0	3	DS	66	0	33	0	0	0	DS100	33	33	0	0	0

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	76	9	0	1	0	0	86	N	88	10	0	1	0	0	N100	11	1	1	0	0
0 SW	13	5	3	0	0	0	21	SW	61	23	14	0	0	0	SW100	38	14	0	0	0
0 SS	5	3	0	1	0	0	9	SS	55	33	0	11	0	0	SS100	44	11	11	0	0
Z DW	6	1	0	1	0	0	8	DW	75	12	0	12	0	0	DW100	25	12	12	0	0
DM	1	0	0	0	0	0	1	DM	100	0	0	0	0	0	DM100	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	66	4	0	0	0	1	71	N	92	5	0	0	0	1	N100	7	1	1	1	1
0 SW	14	6	1	0	0	0	21	SW	66	28	4	0	0	0	SW100	33	4	0	0	0
0 SS	3	1	0	1	0	0	5	SS	60	20	0	20	0	0	SS100	40	20	20	0	0
Z DW	2	1	1	0	0	0	4	DW	50	25	25	0	0	0	DW100	50	25	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	91	7	4	0	0	0	102	N	89	6	3	0	0	0	N100	11	3	0	0	0
0 SW	10	3	1	0	0	0	14	SW	71	21	7	0	0	0	SW100	28	7	0	0	0
0 SS	3	3	1	0	0	0	7	SS	42	42	14	0	0	0	SS100	57	14	0	0	0
Z DW	4	0	0	2	0	0	6	DW	66	0	0	33	0	0	DW100	33	33	33	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	49	4	2	0	1	0	56	N	87	7	3	0	1	0	N100	12	5	2	1	0
0 SW	4	0	0	0	0	0	4	SW	100	0	0	0	0	0	SW100	0	0	0	0	0
0 SS	0	0	0	0	0	0	0	SS	0	0	0	0	0	0	SS	0	0	0	0	0	0
Z DW	0	0	0	0	0	0	0	DW	0	0	0	0	0	0	DW	0	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 29.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	323	36	5	1	1	1	362	N	89	9	1	0	0	0	N100	10	2	0	0	0
0 SW	44	20	5	0	0	1	70	SW	62	28	7	0	0	1	SW100	37	8	1	1	1
0 SS	12	9	2	2	0	0	25	SS	48	36	8	8	0	0	SS100	52	16	8	0	0
Z DW	12	2	2	3	0	0	19	DW	63	10	10	15	0	0	DW100	36	25	15	0	0
DM	1	1	0	0	0	0	2	DM	50	50	0	0	0	0	DM100	50	0	0	0	0
DS	2	0	1	0	0	0	3	DS	66	0	33	0	0	0	DS100	33	33	0	0	0

Table 30

Change in Distribution of Parameter S in 12 Hours from 12Z: January-March

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	35	4	0	0	0	0	39	N	89	10	0	0	0	0	N100	10	0	0	0	0
1 SW	6	4	2	1	0	2	14	SW	35	28	14	7	0	14	SW100	64	35	21	14	14
2 SS	0	1	1	0	0	1	3	SS	0	33	33	0	0	33	SS100	100	66	33	33	33
Z DW	2	0	0	0	0	0	0	DW	0	0	0	0	0	0	DW	0	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	1	1	0	1	0	3	DS	0	33	33	0	33	0	DS100	100	66	33	33	0

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	77	12	7	3	1	1	101	N	76	11	6	2	0	0	N100	23	11	4	1	0
1 SW	7	5	2	0	1	0	15	SW	46	33	13	0	6	0	SW100	53	20	6	6	0
2 SS	2	0	0	2	0	0	4	SS	50	0	0	50	0	0	SS100	50	50	50	0	0
Z DW	0	2	0	0	0	0	2	DW	0	100	0	0	0	0	DW	100	100	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	68	10	6	4	0	0	88	N	77	11	6	4	0	0	N100	22	11	4	0	0
1 SW	7	5	1	0	0	0	13	SW	53	38	7	0	0	0	SW100	46	7	0	0	0
2 SS	1	1	0	0	0	0	2	SS	50	50	0	0	0	0	SS100	50	0	0	0	0
Z DW	1	0	1	0	0	0	0	DW	0	0	0	0	0	0	DW	0	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	1	0	0	0	0	0	1	DS	100	0	0	0	0	0	DS100	0	0	0	0	0	0

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	81	11	4	1	0	0	98	N	82	11	4	2	0	0	N100	17	6	2	0	0
1 SW	8	0	2	2	0	0	12	SW	66	0	16	16	0	0	SW100	33	33	16	0	0
2 SS	1	2	1	0	0	0	4	SS	25	50	25	0	0	0	SS100	75	25	0	0	0
Z DW	0	1	0	1	0	0	2	DW	0	50	0	0	0	0	DW	100	100	50	50	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	50	3	0	0	0	0	53	N	94	5	0	0	0	0	N100	5	0	0	0	0
1 SW	3	0	2	0	0	0	5	SW	60	0	40	0	0	0	SW100	40	40	0	0	0
2 SS	0	0	0	0	0	0	0	SS	0	0	0	0	0	0	SS	0	0	0	0	0	0
Z DW	0	0	0	0	0	0	0	DW	0	0	0	0	0	0	DW	0	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 29.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	311	40	17	9	1	1	379	N	82	10	4	2	0	0	N100	17	7	2	0	0
1 SW	30	14	9	3	1	2	59	SW	50	23	15	5	1	3	SW100	49	25	10	5	3
2 SS	4	4	2	2	0	1	13	SS	30	30	15	15	0	7	SS100	69	38	23	7	7
Z DW	3	3	0	1	0	0	4	DW	0	75	0	25	0	0	DW	100	100	25	25	0	0
DM	1	0	0	0	0	0	1	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	1	1	1	0	1	0	4	DS	25	25	25	0	25	0	DS100	75	50	25	25	0	

Table 31

Change in Distribution of Parameter S
in 24 Hours from 00Z: January-March

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT							24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	34	4	1	0	0	0	39	N	87	10	2	0	0	0	N100	12	2	0	0	0
0 SW	4	3	0	2	2	0	11	SW	36	27	0	18	18	0	SW100	63	36	36	18	0
0 SS	3	1	0	0	0	2	6	SS	50	16	0	0	0	33	SS100	50	33	33	33	33
Z DW	1	1	0	0	0	0	2	DW	50	50	0	0	0	0	DW100	50	0	0	0	0
DM	0	1	1	0	0	0	2	DM	0	50	50	0	0	0	DM100	100	50	0	0	0
DS	0	2	1	0	0	0	3	DS	0	66	33	0	0	0	DS100	100	33	0	0	0

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT							24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	74	11	8	1	0	1	95	N	77	11	8	1	0	1	N100	22	10	2	1	1
0 SW	14	7	2	2	0	0	25	SW	56	28	8	8	0	0	SW100	44	16	8	0	0
0 SS	4	3	1	0	1	0	9	SS	44	33	11	0	11	0	SS100	55	22	11	11	0
Z DW	2	2	0	0	0	0	4	DW	50	50	0	0	0	0	DW100	50	0	0	0	0
DM	1	0	0	0	0	0	1	DM	100	0	0	0	0	0	DM100	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT							24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	54	12	5	5	0	0	77	N	70	15	7	6	0	0	N100	29	14	6	0	0
0 SW	12	5	2	2	0	0	21	SW	57	23	9	9	0	0	SW100	42	19	9	0	0
0 SS	6	2	0	1	0	0	9	SS	66	22	0	11	0	0	SS100	33	11	11	0	0
Z DW	0	0	1	1	0	0	6	DW	66	0	16	16	0	0	DW100	33	33	16	0	0
DM	0	0	0	1	0	0	1	DM	0	0	0100	0	0	0	DM100	100	100	100	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT							24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	93	12	6	3	0	0	112	N	83	8	5	2	0	0	N100	16	8	2	0	0
0 SW	14	1	1	1	0	0	17	SW	82	5	5	5	0	0	SW100	17	11	5	0	0
0 SS	2	3	1	0	0	0	6	SS	33	50	16	0	0	0	SS100	83	16	0	0	0
Z DW	5	2	0	2	0	0	9	DW	55	22	0	22	0	0	DW100	44	22	22	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT							24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	56	5	2	0	0	0	63	N	84	7	3	0	0	0	N100	11	3	0	0	0
0 SW	5	0	0	0	0	0	5	SW	100	0	0	0	0	0	SW100	0	0	0	0	0
0 SS	3	0	0	0	0	0	3	SS	100	0	0	0	0	0	SS100	0	0	0	0	0
Z DW	1	0	0	0	0	0	1	DW	100	0	0	0	0	0	DW100	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT							24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	311	42	23	9	0	1	386	N	80	10	5	2	0	0	N100	19	8	2	0	0
0 SW	49	16	5	7	2	0	79	SW	62	20	6	8	2	0	SW100	37	17	11	2	0
0 SS	18	9	2	1	1	2	33	SS	54	27	6	3	3	6	SS100	45	18	12	9	6
Z DW	13	5	1	3	0	0	22	DW	59	22	4	13	0	0	DW100	41	18	13	0	0
DM	1	1	1	1	0	0	4	DM	25	25	25	25	0	0	DM100	75	50	25	0	0
DS	0	2	1	0	0	0	3	DS	0	66	33	0	0	0	DS100	100	33	0	0	0

Table 32

Change in Distribution of Parameter S
in 24 Hours from 12Z: January-March

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	33	7	[illegible]	[illegible]	[illegible]	1	41	N	80	17	[illegible]	[illegible]	[illegible]	2	N100	19	2	2	2	2
1 SW	6	3	1	0	0	0	10	SW	60	30	10	0	0	0	SW100	40	10	0	0	0
2 SS	0	0	1	0	0	0	1	SS	0	0	100	0	0	0	SS100	100	100	0	0	0
Z DW	0	0	0	0	0	0	0	DW	0	0	0	0	0	0	DW	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	1	0	0	0	0	1	DS	0	100	0	0	0	0	DS	100	100	0	0	0

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	93	8	2	0	0	0	103	N	90	7	1	0	0	0	N100	9	1	0	0	0
1 SW	11	3	0	1	0	0	15	SW	73	20	0	6	0	0	SW100	26	6	6	0	0
2 SS	3	2	0	1	0	0	6	SS	50	33	0	16	0	0	SS100	50	16	16	0	0
Z DW	2	1	0	0	0	0	3	DW	66	33	0	0	0	0	DW100	33	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	82	9	4	0	0	0	95	N	86	9	4	0	0	0	N100	13	4	0	0	0
1 SW	11	5	1	0	0	1	18	SW	61	27	5	0	0	5	SW100	38	11	5	5	5
2 SS	2	3	0	0	0	0	5	SS	40	60	0	0	0	0	SS100	60	0	0	0	0
Z DW	0	0	0	0	0	0	0	DW	0	0	0	0	0	0	DW	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	1	0	0	0	0	0	1	DS	100	0	0	0	0	0	DS	100	0	0	0	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	79	7	3	1	0	0	90	N	87	7	3	1	0	0	N100	12	4	1	0	0
1 SW	9	2	1	1	0	0	13	SW	69	15	7	7	0	0	SW100	30	15	7	0	0
2 SS	2	1	0	0	0	0	3	SS	66	33	0	0	0	0	SS100	33	0	0	0	0
Z DW	3	1	0	0	0	0	4	DW	75	25	0	0	0	0	DW100	25	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	3	3	[illegible]	[illegible]	1	[illegible]	34	N	88	8	[illegible]	0	2	[illegible]	N100	11	2	2	2	0
1 SW	3	0	1	0	0	0	4	SW	75	0	25	0	0	0	SW100	25	25	0	0	0
2 SS	0	0	0	0	0	0	0	SS	0	0	0	0	0	0	SS	0	0	0	0	0
Z DW	0	0	0	0	0	0	0	DW	0	0	0	0	0	0	DW	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	317	34	9	1	1	1	363	N	87	9	2	0	0	0	N100	12	3	0	0	0
1 SW	43	13	4	2	0	1	63	SW	68	21	6	3	0	1	SW100	33	11	5	1	1
2 SS	7	6	1	1	0	0	15	SS	46	40	6	6	0	0	SS100	53	13	6	0	0
Z DW	5	2	0	0	0	0	7	DW	71	28	0	0	0	0	DW100	28	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	1	1	0	0	0	0	2	DS	50	50	0	0	0	0	DS	100	50	0	0	0

Table 33

Change in Distribution of Parameter S in 12 Hours from 00Z: April-June

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	41	3	2	0	2	0	48	N 85	6	4	0	4	0	N100	14	8	4	4	0
0 SW	15	5	1	0	0	0	24	SW 62	33	4	0	0	0	SW100	37	4	0	0	0
0 SS	5	4	1	0	0	0	10	SS 50	40	10	0	0	0	SS100	50	10	0	0	0
Z DW	7	3	1	0	0	0	11	DW 63	27	9	0	0	0	DW100	36	9	0	0	0
DM	2	0	0	0	1	0	3	DM 66	0	0	0	33	0	DM100	33	33	33	33	0
DS	0	1	0	0	1	0	2	DS 0	50	0	0	50	0	DS100	100	50	50	50	0

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	98	13	2	1	0	0	114	N 86	11	1	0	0	0	N100	14	2	0	0	0
0 SW	12	9	2	4	0	0	27	SW 44	33	7	14	0	0	SW100	55	22	14	0	0
0 SS	6	4	2	0	0	0	12	SS 50	33	16	0	0	0	SS100	50	16	0	0	0
Z DW	9	1	2	1	1	0	14	DW 64	7	14	7	7	0	DW100	35	28	14	7	0
DM	1	0	0	0	0	0	1	DM100	0	0	0	0	0	DM100	0	0	0	0	0
DS	2	0	0	0	0	0	2	DS100	0	0	0	0	0	DS100	0	0	0	0	0

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	83	3	1	2	0	1	90	N 92	3	1	2	0	1	N100	7	4	3	1	1
0 SW	20	4	1	0	0	0	25	SW 80	16	4	0	0	0	SW100	20	4	0	0	0
0 SS	6	0	2	0	0	0	8	SS 75	0	25	0	0	0	SS100	25	25	0	0	0
Z DW	11	0	1	0	0	0	12	DW 91	0	8	0	0	0	DW100	8	8	0	0	0
DM	0	0	0	0	0	0	0	DM 0	0	0	0	0	0	DM 0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS 0	0	0	0	0	0	DS 0	0	0	0	0	0

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	156	12	2	0	1	0	171	N 91	7	1	0	0	0	N100	8	1	0	0	0
0 SW	25	5	0	0	0	0	30	SW 83	16	0	0	0	0	SW100	16	0	0	0	0
0 SS	4	0	0	0	0	0	4	SS100	0	0	0	0	0	SS100	0	0	0	0	0
Z DW	7	2	0	1	0	0	10	DW 70	20	0	10	0	0	DW100	30	10	10	0	0
DM	0	0	0	0	0	0	0	DM 0	0	0	0	0	0	DM 0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS 0	0	0	0	0	0	DS 0	0	0	0	0	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	49	1	1	0	0	0	51	N 96	1	1	0	0	0	N100	3	1	0	0	0
0 SW	4	2	1	0	0	0	7	SW 57	28	14	0	0	0	SW100	42	14	0	0	0
0 SS	4	0	0	1	0	0	5	SS 80	0	0	20	0	0	SS100	20	20	20	0	0
Z DW	2	0	1	0	0	0	3	DW 66	0	33	0	0	0	DW100	33	33	0	0	0
DM	0	0	0	0	0	0	0	DM 0	0	0	0	0	0	DM 0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS 0	0	0	0	0	0	DS 0	0	0	0	0	0

LATITUDE 29.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	427	32	8	3	3	1	474	N 90	6	1	0	0	0	N100	9	3	1	0	0
0 SW	76	28	5	4	0	0	113	SW 67	24	4	3	0	0	SW100	32	7	3	0	0
0 SS	25	8	5	1	0	0	39	SS 64	20	12	2	0	0	SS100	35	15	2	0	0
Z DW	36	6	5	2	1	0	50	DW 72	12	10	4	2	0	DW100	29	15	5	2	0
DM	3	0	0	0	1	0	4	DM 75	0	0	0	25	0	DM100	25	25	25	25	0
DS	2	1	0	0	1	0	4	DS 50	25	0	0	25	0	DS100	50	25	25	25	0

Table 34

Change in Distribution of Parameter S
in 12 Hours from 12Z: April-June

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	35	11	6	6	4	1	63	N	56	17	9	9	6	1	N100	44	26	17	7	1
1 SW	4	6	1	4	0	1	16	SW	25	37	6	25	0	6	SW100	75	37	31	6	6
2 SS	1	3	2	0	1	0	7	SS	14	42	28	0	14	0	SS100	85	42	14	14	0
Z CW	0	0	0	0	0	0	0	CW	0	0	0	0	0	0	CW	0	0	0	0	0	0
CM	1	0	0	1	0	1	3	CM	33	0	0	33	0	33	CM100	66	66	66	33	33
CS	0	1	0	0	0	0	1	CS	0	100	0	0	0	0	CS100	100	0	0	0	0

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	91	18	6	8	0	0	123	N	73	14	4	6	0	0	N100	26	11	6	0	0
1 SW	8	5	6	3	1	0	23	SW	34	21	26	13	4	0	SW100	65	43	17	4	0
2 SS	1	4	1	2	0	0	8	SS	12	50	12	25	0	0	SS100	87	37	25	0	0
Z CW	2	1	1	0	0	0	4	CW	50	25	25	0	0	0	CW100	50	25	0	0	0
CM	0	0	0	1	0	0	1	CM	0	0	0	100	0	0	CM100	100	100	100	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0	0

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	99	18	8	7	0	0	123	N	73	14	6	5	0	0	N100	26	12	5	0	0
1 SW	2	0	1	1	0	0	4	SW	50	0	25	25	0	0	SW100	50	50	25	0	0
2 SS	1	1	1	1	0	0	4	SS	25	25	25	25	0	0	SS100	75	50	25	0	0
Z CW	0	1	0	0	0	0	1	CW	0	100	0	0	0	0	CW100	100	0	0	0	0
CM	0	0	0	0	0	0	0	CM	0	0	0	0	0	0	CM	0	0	0	0	0	0
CS	1	0	0	0	0	0	1	CS	100	0	0	0	0	0	CS100	0	0	0	0	0	0

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	143	29	3	9	0	0	189	N	78	15	1	4	0	0	N100	21	6	4	0	0
1 SW	17	3	0	1	0	0	21	SW	80	14	0	4	0	0	SW100	19	4	4	0	0
2 SS	2	0	0	0	0	0	2	SS	100	0	0	0	0	0	SS100	0	0	0	0	0	0
Z CW	2	0	0	0	0	0	2	CW	100	0	0	0	0	0	CW100	0	0	0	0	0	0
CM	1	0	0	0	0	0	1	CM	100	0	0	0	0	0	CM100	0	0	0	0	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	48	8	4	0	0	0	60	N	80	13	6	0	0	0	N100	20	6	0	0	0
1 SW	4	1	1	0	0	0	6	SW	66	16	16	0	0	0	SW100	33	16	0	0	0
2 SS	1	0	0	0	0	0	1	SS	100	0	0	0	0	0	SS100	0	0	0	0	0	0
Z CW	0	1	0	0	0	0	1	CW	0	100	0	0	0	0	CW100	100	0	0	0	0	0
CM	0	0	0	0	0	0	0	CM	0	0	0	0	0	0	CM	0	0	0	0	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0	0

LATITUDE 29.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	412	84	27	33	4	1	558	N	73	15	4	5	1	0	N100	26	11	6	1	0
1 SW	35	15	9	9	1	1	70	SW	50	21	12	12	1	1	SW100	50	28	15	2	1
2 SS	6	8	4	3	1	0	22	SS	27	36	18	13	4	0	SS100	72	36	18	4	0
Z CW	4	3	1	0	0	0	8	CW	50	37	12	0	0	0	CW100	50	12	0	0	0
CM	2	0	0	2	0	1	5	CM	40	0	0	40	0	20	CM100	60	60	60	20	20
CS	1	1	0	0	0	0	2	CS	50	50	0	0	0	0	CS100	50	0	0	0	0

Table 35

Change in Distribution of Parameter S
in 24 Hours from 00Z: April-June

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	38	12	0	5	2	0	63	N	60	19	0	7	3	0	N100	39	20	11	3	0
0 SW	12	0	4	1	0	1	24	SW	50	25	16	4	0	4	SW100	50	25	8	4	4
0 SS	6	1	0	1	1	1	10	SS	60	10	0	10	10	10	SS100	40	30	30	20	10
Z DW	3	4	0	2	2	0	11	DW	27	36	0	18	18	0	DW100	72	36	36	18	0
DM	2	1	0	0	0	1	4	DM	50	25	0	0	0	25	DM100	50	25	25	25	25
DS	1	1	0	1	0	0	3	DS	33	33	0	33	0	0	DS100	66	33	33	0	0

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	88	15	4	5	0	0	108	N	81	12	3	2	0	0	N100	18	6	2	0	0
0 SW	15	7	7	2	1	0	32	SW	46	21	21	6	3	0	SW100	53	31	9	3	0
0 SS	7	4	0	4	0	0	15	SS	46	26	0	26	0	0	SS100	53	26	26	0	0
Z DW	6	3	2	5	0	1	17	DW	35	17	11	29	0	5	DW100	64	47	35	5	5
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	1	0	1	1	0	0	2	DS	50	0	0	50	0	0	DS100	50	50	50	0	0

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	71	12	6	1	0	0	90	N	78	13	6	1	0	0	N100	21	7	1	0	0
0 SW	14	5	2	4	0	0	26	SW	53	23	7	15	0	0	SW100	46	23	15	0	0
0 SS	4	4	0	0	1	0	9	SS	44	44	0	0	11	0	SS100	55	11	11	11	0
Z DW	5	3	0	1	0	0	9	DW	55	33	0	11	0	0	DW100	44	11	11	0	0
DM	1	0	0	1	0	0	2	DM	50	0	0	50	0	0	DM100	50	50	50	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	157	29	4	8	0	0	198	N	79	14	2	4	0	0	N100	20	6	4	0	0
0 SW	29	7	2	2	0	0	40	SW	72	17	5	5	0	0	SW100	27	10	5	0	0
0 SS	4	0	0	0	0	0	4	SS	100	0	0	0	0	0	SS100	0	0	0	0	0
Z DW	9	3	0	0	0	0	12	DW	75	25	0	0	0	0	DW100	25	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	65	5	5	1	0	0	76	N	85	6	5	1	0	0	N100	14	7	1	0	0
0 SW	5	4	2	3	0	0	14	SW	35	28	14	21	0	0	SW100	64	35	21	0	0
0 SS	6	3	0	2	0	0	11	SS	54	27	0	18	0	0	SS100	46	18	18	0	0
Z DW	2	2	2	2	0	0	8	DW	25	25	25	25	0	0	DW100	75	50	25	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	419	71	25	18	2	0	535	N	78	13	4	3	0	0	N100	21	8	3	0	0
0 SW	75	30	17	12	1	1	136	SW	55	22	12	8	0	0	SW100	44	22	10	1	0
0 SS	27	12	0	7	2	1	49	SS	55	24	0	14	4	2	SS100	44	20	20	6	2
Z DW	25	15	4	10	2	1	57	DW	43	26	7	17	3	1	DW100	56	29	22	5	1
DM	3	1	0	1	0	1	6	DM	50	16	0	16	0	16	DM100	50	33	33	16	16
DS	2	1	0	2	0	0	5	DS	40	20	0	40	0	0	DS100	60	40	40	0	0

Table 36

Change in Distribution of Parameter S
in 24 Hours from 12Z: April-June

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	44	4	3	1	2	[illegible]	54	N	81	7	5	1	3	[illegible]	N100	19	11	5	3	[illegible]
1 SW	8	5	2	[illegible]	[illegible]	0	15	SW	53	33	13	0	0	0	SW100	46	13	[illegible]	[illegible]	[illegible]
2 SS	[illegible]	5	[illegible]	[illegible]	1	[illegible]	6	SS	[illegible]	83	[illegible]	0	16	0	SS100	100	16	16	16	[illegible]
Z CW	0	0	0	[illegible]	0	0	0	CW	0	0	0	0	0	0	CW	0	0	[illegible]	0	0
CM	0	1	0	0	1	[illegible]	2	CM	[illegible]	50	[illegible]	[illegible]	50	[illegible]	CM100	100	50	50	[illegible]	[illegible]
CS	1	0	0	0	0	0	1	CS	100	0	0	0	0	0	CS100	0	0	0	0	0

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	98	18	2	2	1	0	121	N	80	14	1	1	0	0	N100	19	4	2	0	0
1 SW	19	2	3	1	0	0	25	SW	76	8	12	4	0	0	SW100	24	16	4	0	0
2 SS	4	4	0	0	0	0	8	SS	50	50	0	0	0	0	SS100	50	0	0	0	0
Z CW	1	1	1	1	0	0	4	CW	25	25	25	25	0	0	CW100	75	50	25	0	0
CM	0	0	0	0	0	0	0	CM	0	0	0	0	0	0	CM	0	0	0	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	95	3	1	2	0	1	102	N	93	2	[illegible]	1	0	[illegible]	N100	6	3	2	[illegible]	[illegible]
1 SW	4	2	[illegible]	0	0	0	6	SW	66	33	0	[illegible]	0	0	SW100	33	0	[illegible]	[illegible]	0
2 SS	[illegible]	0	1	1	1	0	6	SS	50	0	16	16	16	0	SS100	50	50	33	16	0
Z CW	2	0	0	0	0	0	2	CW	100	0	0	0	0	0	CW100	0	0	0	0	0
CM	0	0	0	0	0	0	0	CM	0	0	0	0	0	0	CM	0	0	0	0	0
CS	[illegible]	[illegible]	[illegible]	1	0	[illegible]	1	CS	0	0	[illegible]	100	0	0	CS100	[illegible]	[illegible]	[illegible]	[illegible]	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	152	11	1	1	1	0	166	N	91	6	0	0	0	0	N100	8	1	1	[illegible]	[illegible]
1 SW	10	2	0	0	0	0	12	SW	83	16	0	0	0	0	SW100	16	0	0	0	[illegible]
2 SS	2	0	0	0	0	0	2	SS	100	0	0	0	0	0	SS100	0	0	0	0	0
Z CW	2	0	0	0	0	0	2	CW	100	0	0	0	0	0	CW100	0	0	0	0	0
CM	0	1	[illegible]	[illegible]	0	[illegible]	1	CM	[illegible]	0	0	0	0	0	CM	[illegible]	0	0	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	46	2	2	1	0	0	50	N	90	4	4	2	0	0	N100	10	6	2	[illegible]	0
1 SW	4	0	0	0	0	0	4	SW	100	0	0	0	0	0	SW100	0	0	0	0	0
2 SS	1	0	0	0	0	0	1	SS	100	0	0	0	0	0	SS100	0	0	0	0	0
Z CW	0	1	[illegible]	0	[illegible]	[illegible]	1	CW	[illegible]	100	0	0	0	0	CW100	100	0	0	0	0
CM	0	0	0	0	0	0	0	CM	0	0	0	0	0	0	CM	0	0	0	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	435	38	9	7	4	1	492	N	88	7	1	1	0	0	N100	11	4	2	1	0
1 SW	49	11	5	1	0	0	66	SW	74	17	8	1	0	0	SW100	27	9	1	[illegible]	0
2 SS	14	9	1	1	0	[illegible]	23	SS	43	39	4	4	0	0	SS100	56	[illegible]	13	0	0
Z CW	6	2	1	1	0	0	9	CW	66	22	11	11	0	0	CW100	44	22	11	0	0
CM	0	2	0	0	1	0	3	CM	0	66	0	0	33	0	CM100	100	33	33	[illegible]	0
CS	1	0	0	1	0	0	2	CS	50	0	0	50	0	0	CS100	50	50	50	0	0

Table 37

Change in Distribution of Parameter S
in 12 Hours from 00Z: July-September

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	41	6	1	0	0	1	49	N	83	12	2	0	0	2	N100	16	4	2	2	2
0 SW	20	9	2	0	1	2	34	SW	58	26	6	0	2	5	SW100	41	14	8	8	5
0 SS	4	5	4	1	0	0	14	SS	28	35	28	7	0	0	SS100	71	35	7	0	0
Z DW	2	0	3	1	0	0	6	DW	33	0	50	16	0	0	DW100	66	66	16	0	0
DM	0	0	0	0	1	0	1	DM	0	0	0	0	100	0	DM100	100	100	100	100	0
DS	2	3	2	2	0	0	9	DS	22	33	22	22	0	0	DS100	77	44	22	0	0

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	55	8	1	0	0	0	64	N	85	12	1	0	0	0	N100	14	1	0	0	0
0 SW	11	15	1	0	0	0	27	SW	41	55	3	0	0	0	SW100	59	3	0	0	0
0 SS	5	1	0	0	0	0	6	SS	83	16	0	0	0	0	SS100	16	0	0	0	0
Z DW	5	1	2	0	0	0	8	DW	62	12	25	0	0	0	DW100	37	25	0	0	0
DM	2	0	0	0	0	0	2	DM100	0	0	0	0	0	0	DM100	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	50	3	1	0	0	0	54	N	92	5	1	0	0	0	N100	7	1	0	0	0
0 SW	10	7	0	0	0	0	17	SW	58	41	0	0	0	0	SW100	41	0	0	0	0
0 SS	5	0	1	0	0	0	6	SS	83	0	16	0	0	0	SS100	16	16	0	0	0
Z DW	2	0	1	0	0	0	3	DW	66	0	33	0	0	0	DW100	33	33	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	115	7	0	3	1	0	126	N	91	5	0	2	0	0	N100	8	3	3	0	0
0 SW	12	4	0	0	0	0	16	SW	75	25	0	0	0	0	SW100	25	0	0	0	0
0 SS	4	1	1	0	0	0	6	SS	66	16	16	0	0	0	SS100	33	16	0	0	0
Z DW	10	0	0	1	0	0	11	DW	90	0	0	9	0	0	DW100	9	9	9	0	0
DM	1	0	0	0	0	0	1	DM100	0	0	0	0	0	0	DM100	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	39	4	1	0	0	0	44	N	88	9	2	0	0	0	N100	11	2	0	0	0
0 SW	7	2	2	0	0	0	11	SW	63	18	18	0	0	0	SW100	36	18	0	0	0
0 SS	5	2	0	0	0	0	7	SS	71	28	0	0	0	0	SS100	28	0	0	0	0
Z DW	4	1	1	0	0	0	6	DW	66	16	16	0	0	0	DW100	33	16	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 29.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	300	26	4	3	1	1	357	N	89	8	1	0	0	0	N100	11	2	1	0	0
0 SW	66	37	5	0	1	2	105	SW	57	35	4	0	0	1	SW100	42	7	2	2	1
0 SS	23	9	0	1	0	0	39	SS	58	23	15	2	0	0	SS100	41	17	2	0	0
Z DW	23	2	7	2	0	0	34	DW	67	5	20	5	0	0	DW100	32	26	5	0	0
DM	3	0	0	0	1	0	4	DM	75	0	0	0	25	0	DM100	25	25	25	25	0
DS	2	3	2	2	0	0	9	DS	22	33	22	22	0	0	DS100	77	44	22	0	0

Table 38

Change in Distribution of Parameter S
in 12 Hours from 12Z: July-September

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	36	19	5	3	0	3	66	N	54	28	7	4	0	4	N100	45	16	9	4	4
1 SW	9	10	3	1	0	2	25	SW	36	40	12	4	0	8	SW100	64	24	12	8	8
2 SS	3	4	3	1	1	1	13	SS	23	30	23	7	7	7	SS100	76	46	23	15	7
Z CW	0	0	2	1	0	1	4	CW	0	0	50	25	0	25	CW100	100	100	50	25	25
CM	0	0	0	0	0	1	1	CM	0	0	0	0	0	100	CM100	100	100	100	100	100
CS	0	1	0	0	0	0	1	CS	0	100	0	0	0	0	CS100	100	0	0	0	0

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	52	21	1	7	1	0	82	N	63	25	1	8	1	0	N100	36	11	9	1	0
1 SW	11	12	0	2	0	0	25	SW	44	48	0	8	0	0	SW100	56	8	8	0	0
2 SS	1	1	0	2	0	0	4	SS	25	25	0	50	0	0	SS100	75	50	50	0	0
Z CW	0	0	1	0	0	0	1	CW	0	0	100	0	0	0	CW100	100	100	0	0	0
CM	0	0	0	0	0	0	0	CM	0	0	0	0	0	0	CM	0	0	0	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	49	14	2	3	1	0	69	N	71	20	2	4	1	0	N100	28	8	5	1	0
1 SW	6	4	1	0	0	0	11	SW	54	36	9	0	0	0	SW100	45	9	0	0	0
2 SS	0	0	0	1	0	0	1	SS	0	0	0	100	0	0	SS100	100	100	100	0	0
Z CW	0	0	0	0	0	0	0	CW	0	0	0	0	0	0	CW	0	0	0	0	0
CM	0	0	0	0	0	0	0	CM	0	0	0	0	0	0	CM	0	0	0	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	121	13	5	5	0	0	144	N	84	9	3	3	0	0	N100	15	6	3	0	0
1 SW	7	3	2	0	0	0	12	SW	58	25	16	0	0	0	SW100	41	16	0	0	0
2 SS	3	0	0	0	0	0	3	SS	100	0	0	0	0	0	SS100	0	0	0	0	0
Z CW	1	0	0	2	0	0	3	CW	33	0	0	66	0	0	CW100	66	66	66	0	0
CM	0	1	0	0	0	0	1	CM	0	100	0	0	0	0	CM	100	0	0	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	35	7	3	5	0	0	50	N	70	14	6	10	0	0	N100	30	16	10	0	0
1 SW	5	2	1	1	0	0	9	SW	55	22	11	11	0	0	SW100	44	22	11	0	0
2 SS	0	2	2	0	0	0	4	SS	0	50	50	0	0	0	SS100	100	50	0	0	0
Z CW	0	0	0	0	0	0	0	CW	0	0	0	0	0	0	CW	0	0	0	0	0
CM	0	0	0	0	0	0	0	CM	0	0	0	0	0	0	CM	0	0	0	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0

LATITUDE 29.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	293	74	16	23	2	3	411	N	71	19	3	5	0	1	N100	28	10	6	1	0
1 SW	38	31	7	4	0	2	82	SW	46	37	8	4	0	2	SW100	53	15	7	2	2
2 SS	7	7	5	4	1	1	25	SS	28	28	20	16	4	4	SS100	72	44	24	8	4
Z CW	1	0	3	3	0	1	8	CW	12	0	37	37	0	12	CW100	87	87	50	12	12
CM	0	1	0	0	0	1	2	CM	0	50	0	0	0	50	CM100	100	50	50	50	50
CS	0	1	0	0	0	0	1	CS	0	100	0	0	0	0	CS100	100	0	0	0	0

Table 39

Change in Distribution of Parameter S in 24 Hours from 00Z: July-September

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	30	22	3	8	0	1	46	N 65	26	6	0	0	2	N100	34	8	2	2	2
0 SW	11	13	5	1	0	1	30	SW 33	43	16	3	0	3	SW100	66	26	5	3	3
0 SS	5	3	4	1	0	2	15	SS 33	20	26	6	0	13	SS100	66	46	20	13	13
Z DW	2	1	0	3	0	2	8	DW 25	12	0	37	0	25	DW100	75	62	62	25	25
DM	0	0	2	0	0	0	2	DM 0	0	100	0	0	0	DM100	100	100	0	0	0
DS	3	1	3	1	0	0	8	DS 37	12	37	12	0	0	DS100	62	50	12	0	0

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	38	15	1	3	1	0	58	N 65	25	1	5	1	0	N100	34	8	6	1	0
0 SW	12	11	1	2	1	0	25	SW 48	44	4	8	4	0	SW100	60	16	12	4	0
0 SS	4	2	1	1	0	0	8	SS 50	25	12	12	0	0	SS100	50	25	12	0	0
Z DW	4	0	2	3	1	0	10	DW 40	0	20	30	10	0	DW100	60	60	40	10	0
DM	0	0	0	0	0	0	0	DM 0	0	0	0	0	0	DM 0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS 0	0	0	0	0	0	DS 0	0	0	0	0	0

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	44	15	3	1	0	0	63	N 69	23	4	1	0	0	N100	30	5	1	0	0
0 SW	13	5	3	2	0	0	24	SW 54	25	12	8	0	0	SW100	45	20	8	0	0
0 SS	0	3	0	2	0	0	5	SS 0	60	0	40	0	0	SS100	100	40	40	0	0
Z DW	3	4	0	1	1	0	9	DW 33	44	0	11	11	0	DW100	66	22	22	11	0
DM	1	0	0	0	0	0	1	DM100	0	0	0	0	0	DM100	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS 0	0	0	0	0	0	DS 0	0	0	0	0	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	119	13	2	8	0	0	142	N 83	9	1	5	0	0	N100	16	7	5	0	0
0 SW	11	4	0	2	0	0	19	SW 57	21	10	10	0	0	SW100	42	21	10	0	0
0 SS	3	1	0	1	0	0	5	SS 60	20	0	20	0	0	SS100	40	20	20	0	0
Z DW	8	1	1	1	0	0	11	DW 72	9	9	9	0	0	DW100	27	18	9	0	0
DM	1	0	0	0	0	0	1	DM100	0	0	0	0	0	DM100	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS 0	0	0	0	0	0	DS 0	0	0	0	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	36	5	3	3	0	0	48	N 75	12	6	6	0	0	N100	25	12	6	0	0
0 SW	6	4	5	0	0	0	15	SW 40	26	33	0	0	0	SW100	67	33	0	0	0
0 SS	2	1	0	1	0	0	4	SS 50	25	0	25	0	0	SS100	50	25	25	0	0
Z DW	1	3	0	2	0	0	6	DW 16	50	0	33	0	0	DW100	83	33	33	0	0
DM	0	0	0	0	0	0	0	DM 0	0	0	0	0	0	DM 0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS 0	0	0	0	0	0	DS 0	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT	N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	267	61	12	19	1	1	397	N 74	17	3	4	0	0	N100	25	8	4	0	0
0 SW	56	38	16	7	1	1	113	SW 44	33	14	6	0	0	SW100	56	22	7	1	0
0 SS	14	10	5	6	0	2	37	SS 37	27	13	16	0	5	SS100	62	35	21	5	5
Z DW	18	9	3	10	2	2	44	DW 40	20	5	22	4	4	DW100	59	38	31	9	4
DM	2	0	2	0	0	0	4	DM 50	0	50	0	0	0	DM100	50	50	0	0	0
DS	3	1	3	1	0	0	8	DS 37	12	37	12	0	0	DS100	62	50	12	0	0

Table 40

Change in Distribution of Parameter S
in 24 Hours from 12Z: July-September

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	50	12	1	1	0	4	68	N	73	17	1	1	0	5	N	100	26	8	7	5	5
1 SW	11	10	6	1	0	0	28	SW	39	35	21	3	0	0	SW	100	60	25	3	0	0
2 SS	3	3	4	1	2	0	13	SS	23	23	30	7	15	0	SS	100	76	53	23	15	0
Z DW	0	0	4	0	0	0	4	DW	0	0	100	0	0	0	DW	100	100	100	0	0	0
DM	0	1	0	1	0	0	2	DM	0	50	0	50	0	0	DM	100	100	50	50	0	0
DS	2	1	0	0	0	0	3	DS	66	33	0	0	0	0	DS	100	33	0	0	0	0

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	62	12	2	1	0	0	77	N	80	15	2	1	0	0	N	100	19	3	1	0	0
1 SW	9	14	1	0	0	0	24	SW	37	58	4	0	0	0	SW	100	62	4	0	0	0
2 SS	2	2	0	0	0	0	4	SS	50	50	0	0	0	0	SS	100	50	0	0	0	0
Z DW	2	0	0	0	0	0	2	DW	100	0	0	0	0	0	DW	100	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	41	8	1	1	0	0	51	N	80	15	1	1	0	0	N	100	19	3	1	0	0
1 SW	8	2	0	0	0	0	10	SW	80	20	0	0	0	0	SW	100	20	0	0	0	0
2 SS	1	0	1	0	0	0	1	SS	0	0	100	0	0	0	SS	100	100	100	0	0	0
Z DW	0	0	0	0	0	0	0	DW	0	0	0	0	0	0	DW	0	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	121	12	2	4	0	0	139	N	87	8	1	2	0	0	N	100	12	4	2	0	0
1 SW	6	2	1	0	0	0	9	SW	66	22	11	0	0	0	SW	100	33	11	0	0	0
2 SS	2	0	0	0	0	0	2	SS	100	0	0	0	0	0	SS	100	0	0	0	0	0
Z DW	2	0	0	0	0	0	2	DW	100	0	0	0	0	0	DW	100	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	1	1	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	37	8	0	0	0	0	45	N	82	17	0	0	0	0	N	100	17	0	0	0	0
1 SW	4	3	1	0	0	0	8	SW	50	37	12	0	0	0	SW	100	50	12	0	0	0
2 SS	3	0	1	0	0	0	4	SS	75	0	25	0	0	0	SS	100	25	25	0	0	0
Z DW	0	0	0	0	0	0	0	DW	0	0	0	0	0	0	DW	0	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	311	52	6	7	0	4	380	N	81	13	1	1	0	1	N	100	18	4	2	1	1
1 SW	38	31	9	1	0	0	79	SW	48	39	11	1	0	0	SW	100	51	12	1	0	0
2 SS	10	5	6	1	2	0	24	SS	41	20	25	4	8	0	SS	100	58	37	12	8	0
Z DW	4	4	4	0	0	1	8	DW	50	0	50	0	0	0	DW	100	50	50	0	0	0
DM	0	1	0	1	0	0	2	DM	0	50	0	50	0	0	DM	100	100	50	50	0	0
DS	2	1	0	0	0	0	3	DS	66	33	0	0	0	0	DS	100	33	0	0	0	0

Table 41

Change in Distribution of Parameter S in 12 Hours from 00Z: October-December

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	22	7	0	2	0	0	31	N	71	22	0	6	0	0	N100	29	6	6	0	0
0 SW	1	4	3	3	0	0	11	SW	9	36	27	27	0	0	SW100	93	64	27	0	0
0 SS	3	8	0	1	1	0	13	SS	23	61	0	7	7	0	SS100	76	15	15	7	0
Z DW	1	2	2	1	2	0	8	DW	12	25	25	12	25	0	DW100	87	62	37	25	0
DM	1	1	0	0	0	0	2	DM	50	50	0	0	0	0	DM100	50	0	0	0	0
DS	0	0	1	0	0	0	1	DS	0	0	100	0	0	0	DS100	100	100	0	0	0

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	43	7	1	1	0	0	52	N	82	13	1	1	0	0	N100	17	3	1	0	0
0 SW	9	5	1	0	0	0	15	SW	60	33	6	0	0	0	SW100	40	6	0	0	0
0 SS	4	3	1	1	0	0	9	SS	44	33	11	11	0	0	SS100	55	22	11	0	0
Z DW	3	1	1	0	0	0	5	DW	60	20	20	0	0	0	DW100	40	20	0	0	0
DM	1	0	0	0	0	0	1	DM	100	0	0	0	0	0	DM100	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	42	2	1	2	1	0	48	N	87	4	2	4	2	0	N100	12	8	6	2	0
0 SW	8	4	2	2	0	0	16	SW	50	25	12	12	0	0	SW100	50	25	12	0	0
0 SS	4	1	4	0	0	0	9	SS	44	11	44	0	0	0	SS100	55	44	0	0	0
Z DW	4	0	1	1	0	0	6	DW	66	0	16	16	0	0	DW100	33	33	16	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	70	8	3	1	0	0	82	N	85	9	3	1	0	0	N100	14	4	1	0	0
0 SW	5	5	0	0	0	0	10	SW	50	50	0	0	0	0	SW100	50	0	0	0	0
0 SS	6	4	0	0	0	0	10	SS	60	40	0	0	0	0	SS100	40	0	0	0	0
Z DW	2	2	0	0	0	0	4	DW	50	50	0	0	0	0	DW100	50	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	29	4	1	0	0	0	34	N	85	11	2	0	0	0	N100	14	2	0	0	0
0 SW	2	0	0	1	0	0	3	SW	66	0	0	33	0	0	SW100	33	33	33	0	0
0 SS	2	1	0	0	0	0	3	SS	66	33	0	0	0	0	SS100	33	0	0	0	0
Z DW	1	0	0	0	0	0	1	DW	100	0	0	0	0	0	DW100	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 29.0N-51.0N

	12 HRS LATER-NUMBER							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	206	25	6	5	1	0	247	N	83	11	2	2	0	0	N100	16	5	2	0	0
0 SW	25	18	6	6	0	0	55	SW	45	32	10	10	0	0	SW100	54	21	10	0	0
0 SS	19	17	5	2	1	0	44	SS	43	38	11	4	2	0	SS100	95	18	6	2	0
Z DW	11	5	4	2	2	0	24	DW	45	20	16	8	8	0	DW100	64	33	16	8	0
DM	2	1	0	0	0	0	3	DM	66	33	0	0	0	0	DM100	33	0	0	0	0
DS	0	0	1	0	0	0	1	DS	0	0	100	0	0	0	DS100	100	100	0	0	0

Table 42

Change in Distribution of Parameter S in 12 Hours from 12Z: October-December

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	19	6	2	1	1	0	29	N	65	20	6	3	3	0	N100	34	13	6	3	0
1 SW	6	5	4	0	1	1	17	SW	35	29	23	0	5	5	SW100	64	35	11	11	5
2 SS	2	0	5	2	0	1	10	SS	20	0	50	20	0	10	SS100	80	80	30	10	10
Z CW	2	1	1	2	0	0	6	CW	33	16	16	33	0	0	CW100	66	50	33	0	0
CM	0	0	2	2	0	0	4	CM	0	0	50	50	0	0	CM100	100	100	50	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0	0

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	48	6	2	2	1	0	59	N	81	10	3	3	1	0	N100	18	8	5	1	0
1 SW	5	5	3	0	0	0	13	SW	38	38	23	0	0	0	SW100	61	23	5	0	0
2 SS	2	0	2	1	0	0	5	SS	40	0	40	20	0	0	SS100	60	60	20	0	0
Z CW	2	1	0	0	0	0	3	CW	66	33	0	0	0	0	CW100	33	0	0	0	0
CM	1	0	0	0	0	0	1	CM	100	0	0	0	0	0	CM100	0	0	0	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0	0

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	39	4	6	3	0	0	52	N	75	7	11	5	0	0	N100	25	17	5	0	0
1 SW	7	5	0	1	0	0	13	SW	53	38	0	7	0	0	SW100	46	7	7	0	0
2 SS	2	1	2	2	0	0	7	SS	28	14	28	28	0	0	SS100	71	57	28	0	0
Z CW	2	1	2	0	0	0	5	CW	40	20	40	0	0	0	CW100	60	40	0	0	0
CM	0	0	0	1	0	0	1	CM	0	0	0	100	0	0	CM100	100	100	100	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0	0

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	73	8	1	2	0	0	84	N	86	9	1	2	0	0	N100	13	3	2	0	0
1 SW	9	5	4	3	0	0	21	SW	42	23	19	14	0	0	SW100	57	33	14	0	0
2 SS	3	0	0	0	0	0	3	SS	100	0	0	0	0	0	SS100	0	0	0	0	0
Z CW	1	0	0	1	0	0	2	CW	50	0	0	50	0	0	CW100	50	50	50	0	0
CM	0	0	0	0	0	0	0	CM	0	0	0	0	0	0	CM	0	0	0	0	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	31	3	1	2	0	0	37	N	83	8	2	5	0	0	N100	16	8	5	0	0
1 SW	3	1	1	0	0	0	5	SW	60	20	20	0	0	0	SW100	40	20	0	0	0
2 SS	1	1	0	0	0	0	2	SS	50	50	0	0	0	0	SS100	50	0	0	0	0
Z CW	1	0	0	0	0	0	1	CW	100	0	0	0	0	0	CW100	0	0	0	0	0
CM	0	0	0	0	0	0	0	CM	0	0	0	0	0	0	CM	0	0	0	0	0	0
CS	1	0	0	0	0	0	1	CS	100	0	0	0	0	0	CS	100	0	0	0	0	0

LATITUDE 29.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	210	27	12	10	2	0	261	N	80	10	4	3	0	0	N100	19	9	4	0	0
1 SW	30	21	12	4	1	1	69	SW	43	30	17	5	1	1	SW100	56	26	8	2	1
2 SS	11	2	9	5	0	1	27	SS	37	7	33	18	0	3	SS100	62	55	22	3	3
Z CW	8	3	3	3	0	0	17	CW	47	17	17	17	0	0	CW100	52	35	17	0	0
CM	1	0	2	3	0	0	6	CM	16	0	33	50	0	0	CM100	83	83	50	0	0
CS	1	0	0	0	0	0	1	CS	100	0	0	0	0	0	CS	100	0	0	0	0	0

Table 43

Change in Distribution of Parameter S
in 24 Hours from 00Z: October-December

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	24	4	3	0	0	0	31	N	77	12	9	0	0	0	N100	22	9	0	0	0
0 SW	5	3	4	1	0	0	13	SW	38	23	30	7	0	0	SW100	61	38	7	0	0
0 SS	2	3	4	2	0	0	13	SS	15	38	30	15	0	0	SS100	84	45	15	0	0
Z DW	0	2	3	2	0	0	7	DW	0	28	42	28	0	0	DW100	100	71	26	0	0
DM	0	0	0	1	1	1	3	DM	0	0	0	33	33	33	DM100	100	100	100	66	33
DS	0	0	0	1	0	0	1	DS	0	0	100	0	0	0	DS100	100	100	100	0	0

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	42	16	3	5	2	0	68	N	67	16	4	8	3	0	N100	32	16	11	3	0
0 SW	8	4	2	0	0	0	14	SW	57	28	14	0	0	0	SW100	42	14	0	0	0
0 SS	3	3	2	0	0	0	8	SS	37	37	25	0	0	0	SS100	62	25	0	0	0
Z DW	3	1	1	3	0	0	8	DW	37	12	12	37	0	0	DW100	62	50	37	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	36	5	7	3	0	0	51	N	70	9	13	5	0	0	N100	29	19	5	0	0
0 SW	10	2	2	0	0	0	14	SW	71	14	14	0	0	0	SW100	28	14	0	0	0
0 SS	3	3	1	1	0	0	8	SS	37	37	12	12	0	0	SS100	62	25	12	0	0
Z DW	1	2	0	2	0	0	5	DW	20	40	0	40	0	0	DW100	80	40	40	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	1	0	0	0	0	0	1	DS100	0	0	0	0	0	0	DS100	0	0	0	0	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	87	7	4	3	0	0	101	N	86	6	3	2	0	0	N100	13	6	2	0	0
0 SW	8	4	2	0	0	0	14	SW	57	28	14	0	0	0	SW100	42	14	0	0	0
0 SS	6	0	0	1	0	0	7	SS	85	0	0	14	0	0	SS100	14	14	14	0	0
Z DW	3	1	0	0	0	0	4	DW	75	25	0	0	0	0	DW100	25	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	42	4	2	2	0	0	50	N	84	8	4	4	0	0	N100	16	8	4	0	0
0 SW	5	1	0	0	0	0	6	SW	83	16	0	0	0	0	SW100	16	0	0	0	0
0 SS	3	0	0	0	0	0	3	SS100	0	0	0	0	0	0	SS100	0	0	0	0	0
Z DW	3	0	0	0	0	0	3	DW100	0	0	0	0	0	0	DW100	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	231	36	19	15	2	0	295	N	78	10	6	4	0	0	N100	21	11	5	0	0
0 SW	36	14	10	1	0	0	61	SW	59	22	15	1	0	0	SW100	40	18	1	0	0
0 SS	17	11	7	4	0	0	39	SS	43	28	17	10	0	0	SS100	56	28	10	0	0
Z DW	10	6	4	7	0	0	27	DW	37	22	14	25	0	0	DW100	62	40	25	0	0
DM	0	0	0	1	1	1	3	DM	0	0	0	33	33	33	DM100	100	100	100	66	33
DS	1	0	0	1	0	0	2	DS	50	0	0	50	0	0	DS100	50	50	50	0	0

Table 44

Change in Distribution of Parameter S in 24 Hours from 12Z: October-December

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	12	6	1	2	0	0	21	N	57	28	4	9	0	0	N100	42	14	9	0	0
1 SW	7	7	4	3	0	0	21	SW	33	33	19	14	0	0	SW100	66	33	14	0	0
2 SS	1	3	2	1	1	0	8	SS	12	37	25	12	12	0	SS100	87	50	25	12	0
Z DW	1	2	0	0	2	0	6	DW	16	50	0	0	33	0	DW100	83	33	33	33	0
DM	0	1	1	0	1	0	3	DM	0	33	33	0	33	0	DM100	100	66	33	33	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	38	9	6	1	0	0	48	N	79	18	0	2	0	0	N100	20	2	2	0	0
1 SW	12	3	2	1	0	0	18	SW	66	16	11	5	0	0	SW100	33	16	5	0	0
2 SS	1	2	0	0	0	0	3	SS	33	66	0	0	0	0	SS100	66	0	0	0	0
Z DW	2	1	0	1	0	0	4	DW	50	25	0	25	0	0	DW100	50	25	25	0	0
DM	1	0	1	0	0	0	1	DM	100	0	0	0	0	0	DM100	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	53	7	4	1	0	0	65	N	81	10	6	1	0	0	N100	18	7	1	0	0
1 SW	3	3	1	0	0	0	7	SW	42	42	14	0	0	0	SW100	57	14	0	0	0
2 SS	4	0	2	0	0	0	6	SS	66	0	33	0	0	0	SS100	33	33	0	0	0
Z DW	1	0	0	0	0	0	1	DW	100	0	0	0	0	0	DW100	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	52	8	0	1	0	0	61	N	85	13	0	1	0	0	N100	14	1	1	0	0
1 SW	11	3	0	0	0	0	14	SW	78	21	0	0	0	0	SW100	21	0	0	0	0
2 SS	2	0	0	0	0	0	2	SS	100	0	0	0	0	0	SS100	0	0	0	0	0
Z DW	1	1	0	0	0	0	2	DW	50	50	0	0	0	0	DW100	50	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	22	3	0	0	0	0	25	N	88	12	0	0	0	0	N100	12	0	0	0	0
1 SW	2	1	1	0	0	0	4	SW	50	25	25	0	0	0	SW100	50	25	0	0	0
2 SS	0	1	0	1	0	0	2	SS	0	50	0	50	0	0	SS100	100	50	50	0	0
Z DW	0	0	0	0	0	0	0	DW	0	0	0	0	0	0	DW	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	1	0	0	0	0	0	1	DS	100	0	0	0	0	0	DS100	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	177	33	5	5	0	0	221	N	80	15	2	2	0	0	N100	19	4	2	0	0
1 SW	35	17	8	4	0	0	64	SW	54	26	12	6	0	0	SW100	45	18	6	0	0
2 SS	8	6	4	2	1	0	21	SS	38	28	19	9	4	0	SS100	61	33	14	4	0
Z DW	5	5	0	1	2	0	13	DW	38	38	0	7	15	0	DW100	61	23	23	15	0
DM	1	1	1	0	1	0	4	DM	25	25	25	0	25	0	DM100	75	50	25	25	0
DS	1	0	0	0	0	0	1	DS	100	0	0	0	0	0	DS100	0	0	0	0	0

Table 45

Change in Distribution of Parameter D in 12 Hours from 00Z: January-March

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	4	3	1	1	0	0	9	N	44	33	11	11	0	0	N100	56	22	11	0	0
0 SW	2	5	1	3	0	0	11	SW	18	45	9	27	0	0	SW100	81	36	27	0	0
0 SS	2	3	3	3	2	0	13	SS	15	23	23	23	15	0	SS100	84	61	38	15	0
Z DW	3	5	2	8	1	2	18	DW	0	27	11	44	5	11	DW100100		72	61	16	11
DM	3	0	3	2	3	2	13	DM	0	0	30	20	30	20	DM100100100			70	50	20
DS	1	0	1	0	3	0	5	DS	20	0	20	0	60	0	DS100	80	60	60	60	0

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	14	9	2	2	0	0	27	N	51	33	7	7	0	0	N100	48	14	7	0	0
0 SW	8	12	5	1	0	0	26	SW	30	46	19	3	0	0	SW100	69	23	3	0	0
0 SS	1	6	4	7	3	0	21	SS	4	28	19	33	14	0	SS100	95	66	47	14	0
Z DW	5	9	5	16	0	0	35	DW	14	25	14	45	0	0	DW100	86	60	46	0	0
DM	0	3	1	4	5	1	14	DM	0	21	7	28	35	7	DM100100		78	71	42	7
DS	0	1	0	0	1	0	2	DS	0	50	0	0	50	0	DS100100		50	50	50	0

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	17	5	4	5	0	0	31	N	54	16	12	16	0	0	N100	45	29	16	0	0
0 SW	11	11	3	5	1	1	32	SW	34	34	9	15	3	3	SW100	65	31	21	6	3
0 SS	4	4	3	5	1	0	17	SS	23	23	17	29	5	0	SS100	76	52	35	5	0
Z DW	0	5	6	4	0	0	15	DW	0	33	40	26	0	0	DW100100		66	26	0	0
DM	2	0	1	3	0	0	6	DM	33	0	16	50	0	0	DM100		66	50	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	27	10	4	4	0	0	45	N	60	22	8	8	0	0	N100	40	17	8	0	0
0 SW	11	6	6	4	0	0	31	SW	35	25	25	12	0	0	SW100	64	38	12	0	0
0 SS	4	6	5	4	1	1	23	SS	17	34	21	17	4	4	SS100	82	47	26	8	4
Z DW	2	8	4	10	1	1	26	DW	7	30	15	38	3	3	DW100	92	61	46	7	3
DM	0	1	2	1	0	0	4	DM	0	25	50	25	0	0	DM100100		75	25	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	31	10	5	0	1	0	47	N	65	21	10	0	2	0	N100	34	12	2	2	0
0 SW	7	1	0	0	0	0	8	SW	87	12	0	0	0	0	SW100	12	0	0	0	0
0 SS	1	1	1	1	0	0	4	SS	25	25	25	25	0	0	SS100	75	50	25	0	0
Z DW	1	0	0	0	0	0	1	DW	100	0	0	0	0	0	DW100		0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 28.0N-51.0N

	12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	93	37	16	12	1	0	159	N	58	23	10	7	0	0	N100	41	18	8	0	0
0 SW	39	37	17	13	1	1	108	SW	36	34	15	12	0	0	SW100	63	29	13	1	0
0 SS	12	22	16	20	7	1	78	SS	15	28	20	25	8	1	SS100	84	56	35	13	1
Z DW	8	27	17	38	2	3	95	DW	8	28	17	40	2	3	DW100	91	63	45	5	3
DM	2	4	7	10	8	3	34	DM	5	11	20	29	23	8	DM100	94	82	61	32	8
DS	1	1	1	0	4	0	7	DS	14	14	14	0	57	0	DS100	86	71	57	57	0

Table 46

Change in Distribution of Parameter D
in 12 Hours from 12Z: January-March

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	2	0	3	2	0	0	7	N	28	0	42	28	0	0	N100	71	71	28	0	0
1 SW	2	2	3	0	2	2	11	SW	18	18	27	0	18	18	SW1[illegible]	81	63	36	36	18
2 SS	1	2	3	3	1	1	11	SS	9	18	27	27	9	9	SS100	90	72	45	18	9
Z DW	3	3	2	4	3	0	15	DW	20	20	13	26	20	0	DW100	80	60	46	20	0
DM	0	1	0	5	1	1	8	DM	0	12	0	62	12	12	DM100	100	87	87	25	12
DS	0	1	0	3	2	1	7	DS	0	14	0	42	28	14	DS100	100	85	85	42	14

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	11	13	2	2	0	0	28	N	39	46	7	7	0	0	N100	60	14	7	0	0
1 SW	8	12	12	3	1	1	37	SW	21	32	32	8	2	2	SW100	78	45	13	5	2
2 SS	3	0	4	8	3	0	18	SS	16	0	22	44	16	0	SS100	83	83	61	16	0
Z DW	3	5	6	10	6	1	31	DW	9	16	19	32	19	3	DW100	90	74	54	22	3
DM	0	0	1	1	5	0	7	DM	0	0	14	14	71	0	DM100	100	86	86	71	0
DS	0	0	0	1	0	0	1	DS	0	0	0	100	0	0	DS100	100	100	100	0	0

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	17	7	5	4	0	0	33	N	51	21	15	12	0	0	N100	48	27	12	0	0
1 SW	6	7	3	5	0	0	21	SW	28	33	14	23	0	0	SW100	71	38	23	0	0
2 SS	4	6	5	4	2	0	21	SS	19	28	23	19	9	0	SS100	80	52	28	9	0
Z DW	5	5	4	8	3	0	25	DW	20	20	16	32	12	0	DW100	80	60	44	12	0
DM	0	2	0	1	0	0	3	DM	0	66	0	33	0	0	DM100	100	33	33	0	0
DS	0	1	0	0	0	0	1	DS	0	100	0	0	0	0	DS100	100	0	0	0	0

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	19	12	3	5	0	0	39	N	48	30	7	12	0	0	N100	51	20	12	0	0
1 SW	17	4	7	2	2	0	32	SW	53	12	21	6	6	0	SW100	46	34	12	6	0
2 SS	2	5	6	6	1	1	20	SS	10	25	30	30	5	0	SS100	90	65	35	5	0
Z DW	2	7	4	5	2	0	20	DW	10	35	20	25	10	0	DW100	90	55	35	10	0
DM	0	1	1	1	0	0	3	DM	0	33	33	33	0	0	DM100	100	66	33	0	0
DS	0	0	0	2	0	0	2	DS	0	0	0	100	0	0	DS100	100	100	100	0	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	33	7	0	1	0	0	41	N	80	17	0	2	0	0	N100	19	2	2	0	0
1 SW	8	3	2	1	0	0	14	SW	57	21	14	7	0	0	SW100	42	21	7	0	0
2 SS	3	0	0	0	0	0	3	SS	100	0	0	0	0	0	SS100	0	0	0	0	0
Z DW	0	0	0	0	0	0	0	DW	0	0	0	0	0	0	DW	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 29.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	82	39	13	14	4	0	148	N	55	26	8	9	0	0	N100	44	18	9	0	0
1 SW	41	28	27	11	5	3	115	SW	35	24	23	9	4	2	SW100	64	40	16	6	2
2 SS	13	13	18	21	7	1	73	SS	17	17	24	28	9	1	SS100	82	64	39	10	1
Z DW	13	20	16	27	14	1	91	DW	14	21	17	29	15	1	DW100	85	63	46	16	1
DM	0	4	2	8	6	1	21	DM	0	19	9	38	28	4	DM100	100	80	71	33	4
DS	0	2	0	6	2	1	11	DS	0	18	0	54	18	9	DS100	100	81	81	27	9

Table 47

Change in Distribution of Parameter D in 24 Hours from 00Z: January-March

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	1	2	1	1	1	0	6	N	16	33	16	16	16	0	N100	83	50	33	16	0
0 SW	1	1	3	3	0	0	8	SW	12	12	37	37	0	0	SW100	87	75	37	0	0
0 SS	4	2	0	2	0	1	9	SS	44	22	0	22	0	11	SS100	56	33	33	11	11
Z DW	3	2	5	2	9	1	22	DW	13	9	22	9	40	4	DW100	86	77	54	45	4
DM	0	2	2	4	3	1	12	DM	0	16	16	33	25	8	DM100	100	83	66	33	8
DS	0	0	1	4	0	1	6	DS	0	0	16	66	0	16	DS100	100	83	16	16	16

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	15	7	5	2	0	1	31	N	48	22	19	6	0	3	N100	51	29	9	3	3
0 SW	6	10	6	3	3	0	28	SW	21	35	21	10	10	0	SW100	78	42	21	10	0
0 SS	5	5	4	7	3	0	24	SS	20	20	16	29	12	0	SS100	79	58	41	12	0
Z DW	3	7	9	11	4	2	36	DW	8	19	25	30	11	5	DW100	91	72	47	16	5
DM	1	1	1	5	3	1	13	DM	7	7	7	46	23	7	DM100	92	84	76	30	7
DS	1	0	0	1	0	0	2	DS	50	0	0	50	0	0	DS100	50	50	50	0	0

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	18	10	4	7	1	0	40	N	45	25	10	17	2	0	N100	55	30	20	2	0
0 SW	7	5	3	8	0	0	24	SW	29	20	12	33	0	0	SW100	70	45	33	0	0
0 SS	3	7	3	3	1	0	17	SS	17	41	17	17	5	0	SS100	82	41	23	5	0
Z DW	6	7	6	3	1	0	25	DW	24	28	32	12	4	0	DW100	76	48	16	4	0
DM	0	2	3	2	1	0	8	DM	0	25	37	25	12	0	DM100	100	75	37	12	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	23	15	7	4	0	0	49	N	46	30	14	8	0	0	N100	53	22	8	0	0
0 SW	14	10	7	7	0	0	38	SW	35	26	18	18	0	0	SW100	63	36	18	0	0
0 SS	6	5	5	8	1	0	25	SS	24	20	20	32	4	0	SS100	76	56	36	4	0
Z DW	7	3	7	6	4	0	27	DW	25	11	25	22	14	0	DW100	74	62	37	14	0
DM	3	2	0	0	0	0	5	DM	60	40	0	0	0	0	DM100	40	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	35	8	5	2	0	0	50	N	70	16	10	4	0	0	N100	30	14	4	0	0
0 SW	7	5	1	0	0	0	13	SW	53	38	7	0	0	0	SW100	46	7	0	0	0
0 SS	5	0	0	0	0	0	5	SS	100	0	0	0	0	0	SS100	0	0	0	0	0
Z DW	1	2	1	0	0	0	4	DW	25	50	25	0	0	0	DW100	75	25	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	92	42	23	16	2	1	176	N	52	23	13	9	1	0	N100	47	23	10	1	0
0 SW	35	32	20	21	3	0	111	SW	31	28	18	18	2	0	SW100	68	39	21	2	0
0 SS	23	19	12	20	5	1	80	SS	28	23	15	25	6	1	SS100	71	47	32	7	1
Z DW	20	21	30	22	18	3	114	DW	17	18	26	19	15	2	DW100	82	64	37	18	2
DM	4	7	6	12	7	2	38	DM	10	18	15	31	18	5	DM100	89	71	55	23	5
DS	1	0	1	5	0	1	8	DS	12	0	12	62	0	12	DS100	87	87	75	12	12

Table 48

Change in Distribution of Parameter D
in 24 Hours from 12Z: January-March

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	2	4	2	0	0	1	9	N	22	44	22	0	0	11	N100	77	33	11	11	11
1 SW	3	2	2	4	1	1	13	SW	23	15	15	30	7	7	SW100	76	61	46	15	7
2 SS	1	1	1	3	3	0	9	SS	11	11	11	33	33	0	SS100	88	77	66	33	0
Z DW	1	6	2	3	1	1	14	DW	7	42	14	21	7	7	DW100	92	50	35	14	7
DM	1	1	1	1	1	0	5	DM	20	20	20	20	20	0	DM100	80	60	40	20	0
DS	0	0	0	1	2	0	3	DS	0	0	0	33	66	0	DS100	100	100	100	66	0

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	13	10	1	4	0	0	28	N	46	35	3	14	0	0	N100	53	17	14	0	0
1 SW	11	10	8	5	1	0	35	SW	31	28	22	14	2	0	SW100	68	40	17	2	0
2 SS	1	9	3	7	1	0	21	SS	4	42	14	33	4	0	SS100	95	52	38	4	0
Z DW	2	9	6	11	4	0	32	DW	6	28	18	34	12	0	DW100	93	65	46	12	0
DM	0	1	1	3	3	1	9	DM	0	11	11	33	33	11	DM100	100	88	77	44	11
DS	0	1	0	0	1	0	2	DS	0	50	0	0	50	0	DS100	100	50	50	50	0

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	15	8	4	4	0	0	31	N	48	25	12	12	0	0	N100	51	25	12	0	0
1 SW	9	8	5	10	1	1	33	SW	24	24	15	30	3	3	SW100	75	51	36	6	3
2 SS	5	10	8	4	1	0	28	SS	17	35	28	14	3	0	SS100	82	46	17	3	0
Z DW	6	5	8	4	1	0	24	DW	25	20	33	16	4	0	DW100	75	54	20	4	0
DM	0	0	1	1	0	0	2	DM	0	0	50	50	0	0	DM100	100	100	50	0	0
DS	0	1	0	0	0	0	1	DS	0	100	0	0	0	0	DS100	100	0	0	0	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	26	7	5	2	2	0	42	N	61	16	11	4	4	0	N100	38	21	9	4	0
1 SW	7	8	4	7	0	0	26	SW	26	30	15	26	0	0	SW100	73	42	26	0	0
2 SS	4	7	6	4	0	0	21	SS	19	33	28	19	0	0	SS100	80	47	19	0	0
Z DW	3	5	3	2	2	0	15	DW	20	33	20	13	13	0	DW100	80	46	26	13	0
DM	2	0	0	1	1	0	4	DM	50	0	0	25	25	0	DM100	50	50	50	25	0
DS	0	1	0	1	0	0	2	DS	0	50	0	50	0	0	DS100	100	50	50	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	19	7	1	1	1	0	28	N	67	25	3	3	3	0	N100	32	7	3	3	0
1 SW	3	2	1	0	0	0	6	SW	50	33	16	0	0	0	SW100	50	16	0	0	0
2 SS	4	0	0	0	0	0	4	SS	100	0	0	0	0	0	SS100	0	0	0	0	0
Z DW	0	0	0	0	0	0	0	DW	0	0	0	0	0	0	DW	0	0	0	0	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	73	36	13	10	3	1	136	N	54	26	9	7	2	0	N100	45	19	10	2	0
1 SW	32	30	20	26	3	2	113	SW	28	26	17	23	2	1	SW100	71	45	27	4	1
2 SS	16	27	18	18	5	0	83	SS	18	32	21	21	6	0	SS100	81	49	27	6	0
Z DW	12	25	19	24	8	1	89	DW	14	29	22	28	9	1	DW100	85	56	34	10	1
DM	3	2	3	6	5	1	20	DM	15	10	15	30	25	5	DM100	85	75	60	30	5
DS	0	3	0	2	3	0	8	DS	0	37	0	25	37	0	DS100	100	62	62	37	0

Table 49

Change in Distribution of Parameter D
in 12 Hours from 00Z: April-June

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	4	1	2	0	0	0	7	N	57	14	28	0	0	0	N100	42	28	0	0	0
0 SW	3	6	3	4	2	0	18	SW	16	33	16	22	11	0	SW100	83	50	33	11	0
0 SS	3	2	6	3	2	1	17	SS	17	11	35	17	11	5	SS100	82	70	35	17	5
Z DW	3	5	8	9	6	2	34	DW	8	17	23	26	17	5	DW100	91	73	50	23	5
DM	2	3	2	4	3	0	14	DM	14	21	14	28	21	0	DM100	85	64	50	21	0
DS	0	0	1	4	3	0	8	DS	0	0	12	50	37	0	DS100	100	100	87	37	0

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	15	12	2	1	1	0	31	N	48	38	6	3	3	0	N100	51	12	6	3	0
0 SW	10	9	4	7	1	0	31	SW	32	29	12	22	3	0	SW100	67	38	25	3	0
0 SS	4	7	8	9	2	1	30	SS	13	23	25	30	6	3	SS100	86	63	36	6	0
Z DW	6	21	14	10	4	2	57	DW	10	36	24	17	7	3	DW100	89	52	28	10	3
DM	0	1	2	5	5	2	15	DM	0	6	13	33	33	13	DM100	100	93	80	46	13
DS	0	1	1	1	3	0	6	DS	0	16	16	16	50	0	DS100	100	83	66	50	0

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	22	11	3	7	0	0	43	N	51	25	6	16	0	0	N100	48	23	16	0	0
0 SW	16	13	4	4	0	1	38	SW	42	34	10	10	0	2	SW100	57	23	13	2	2
0 SS	9	4	5	9	0	0	27	SS	33	14	18	33	0	0	SS100	66	51	33	0	0
Z DW	7	7	5	3	0	0	22	DW	31	31	22	13	0	0	DW100	68	36	13	0	0
DM	2	1	0	1	1	0	5	DM	40	20	0	20	20	0	DM100	60	40	40	20	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	59	10	11	2	1	1	84	N	70	11	13	2	1	1	N100	29	17	4	2	1
0 SW	20	19	8	5	1	0	53	SW	37	35	15	9	1	0	SW100	62	26	11	1	0
0 SS	20	8	3	9	0	0	40	SS	50	20	7	22	0	0	SS100	50	30	22	0	0
Z DW	6	9	3	8	0	1	29	DW	27	31	10	27	0	3	DW100	72	41	31	3	3
DM	1	1	2	1	3	0	8	DM	12	12	25	12	37	0	DM100	87	75	50	37	0
DS	0	0	0	1	0	0	1	DS	0	0	0	100	0	0	DS100	100	100	100	0	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	27	4	2	0	0	1	34	N	79	11	5	0	0	2	N100	20	8	2	2	2
0 SW	11	3	1	1	0	0	16	SW	68	18	6	6	0	0	SW100	31	12	6	0	0
0 SS	2	3	1	2	0	0	8	SS	25	37	12	25	0	0	SS100	75	37	25	0	0
Z DW	3	2	1	1	1	0	8	DW	37	25	12	12	12	0	DW100	62	37	25	12	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0	0

LATITUDE 29.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	127	38	20	16	2	2	199	N	63	19	10	5	1	1	N100	35	17	7	2	1
0 SW	60	50	20	21	4	1	156	SW	38	32	12	13	2	1	SW100	61	29	16	3	1
0 SS	38	24	23	32	4	1	122	SS	31	19	18	26	3	1	SS100	69	49	30	4	0
Z DW	27	45	31	31	11	5	150	DW	18	30	20	20	7	3	DW100	82	52	32	10	3
DM	5	6	5	11	12	2	42	DM	11	14	14	26	28	4	DM100	85	73	59	33	4
DS	0	1	2	6	6	0	15	DS	0	6	13	40	40	0	DS100	100	93	80	40	0

Table 50

Change in Distribution of Parameter D
in 12 Hours from 12Z: April-June

LATITUDE 29.0N-34.5N

12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	4	4	1	2	0	0	11	N	36	36	9	18	0	0	N	100	63	27	18	0	0
1 SW	3	3	3	5	1	0	15	SW	20	20	20	33	6	0	SW	100	80	60	40	6	0
2 SS	2	3	6	4	2	2	18	SS	11	16	27	22	11	11	SS	100	89	72	44	22	11
Z CW	0	4	5	7	7	4	27	CW	0	14	18	25	25	14	CW	100	100	85	66	40	14
CM	1	1	3	6	4	2	16	CM	6	6	20	40	13	13	CM	100	93	86	66	26	13
CS	0	0	0	2	0	2	4	CS	0	0	0	50	0	50	CS	100	100	100	50	50	50

LATITUDE 34.5N-37.5N

12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	13	5	6	9	1	0	34	N	38	14	17	26	2	0	N	100	61	47	29	2	0
1 SW	11	7	12	15	1	0	45	SW	22	15	26	33	2	0	SW	100	77	62	35	2	0
2 SS	2	6	8	12	4	1	33	SS	6	18	24	36	12	3	SS	100	93	75	51	15	3
Z CW	1	6	4	11	7	1	30	CW	3	20	13	36	23	3	CW	100	96	76	63	26	3
CM	0	1	2	7	2	1	13	CM	0	7	15	54	15	7	CM	100	92	76	23	7	
CS	1	2	1	0	1	0	4	CS	0	50	25	0	25	0	CS	100	100	50	25	25	0

LATITUDE 37.5N-41.0N

12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	29	15	10	3	1	0	58	N	50	25	17	5	1	0	N	100	50	24	6	1	0
1 SW	11	8	7	7	0	0	33	SW	33	24	21	21	0	0	SW	100	66	42	21	0	0
2 SS	4	6	3	4	3	0	20	SS	20	30	15	20	15	0	SS	100	80	50	35	15	0
Z CW	3	7	4	4	2	0	20	CW	15	35	20	20	10	0	CW	100	85	50	30	10	0
CM	0	0	0	1	0	0	1	CM	0	0	0	100	0	0	CM	100	100	100	100	0	0
CS	1	0	0	0	0	0	1	CS	100	0	0	0	0	0	CS	100	0	0	0	0	0

LATITUDE 41.0N-46.0N

12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	51	30	12	11	1	0	103	N	49	29	9	10	1	0	N	100	50	21	11	1	0
1 SW	17	16	9	10	2	1	54	SW	31	29	16	18	3	1	SW	100	68	38	24	5	1
2 SS	9	6	1	8	1	0	25	SS	36	24	4	32	4	0	SS	100	64	40	36	4	0
Z CW	5	5	4	10	3	0	27	CW	19	18	14	37	11	0	CW	100	81	62	48	11	0
CM	0	1	2	1	1	0	5	CM	0	20	40	20	20	0	CM	100	100	80	40	20	0
CS	0	0	1	0	0	0	1	CS	0	100	0	0	0	0	CS	100	100	100	0	0	0

LATITUDE 46.0N-51.0N

12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	28	12	7	1	0	0	48	N	58	25	15	2	0	0	N	100	42	17	2	0	0
1 SW	6	4	3	2	0	0	15	SW	40	26	20	13	0	0	SW	100	60	33	13	0	0
2 SS	3	2	0	0	0	0	5	SS	60	40	0	0	0	0	SS	100	40	0	0	0	0
Z CW	0	1	0	0	0	0	1	CW	0	100	0	0	0	0	CW	100	100	0	0	0	0
CM	0	0	0	1	0	0	1	CM	0	0	0	100	0	0	CM	100	100	100	100	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0	0

LATITUDE 29.0N-51.0N

12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	123	66	34	26	3	0	252	N	48	26	13	10	1	0	N	100	51	25	11	1	0
1 SW	46	39	32	40	4	1	162	SW	28	23	20	24	2	0	SW	100	71	49	27	3	0
2 SS	20	23	17	38	10	3	111	SS	18	20	15	34	9	3	SS	100	80	57	43	12	3
Z CW	9	25	17	32	19	5	109	CW	8	23	16	30	18	4	CW	100	91	69	53	22	4
CM	1	3	7	16	5	3	35	CM	2	8	20	46	14	8	CM	100	97	88	68	22	8
CS	1	2	2	2	1	2	10	CS	10	20	20	20	10	20	CS	100	90	70	50	30	20

Table 51

Change in Distribution of Parameter D in 24 Hours from 00Z: April-June

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT							24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	4	1	4	3	1	0	13	N	31	7	30	23	7	0	N100	69	61	31	7	0
0 SW	2	6	5	6	3	0	24	SW	8	33	20	25	12	3	SW100	91	58	37	12	3
0 SS	2	5	3	6	4	1	20	SS	10	25	15	30	20	5	SS100	90	65	50	20	5
Z DW	2	6	5	10	6	4	33	DW	6	18	15	30	18	12	DW100	93	75	60	30	12
DM	2	2	0	4	1	2	17	DM	11	11	35	23	5	11	DM100	88	76	41	17	11
DS	0	0	1	4	1	2	8	DS	0	0	12	50	12	25	DS100	100	100	87	37	25

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT							24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	15	5	7	5	0	0	32	N	46	15	21	15	3	0	N100	53	37	15	0	0
0 SW	6	5	9	8	2	0	30	SW	20	16	30	26	6	0	SW100	80	63	33	6	0
0 SS	6	5	7	9	5	0	32	SS	18	15	21	28	15	0	SS100	81	65	43	15	0
Z DW	7	13	9	23	5	4	61	DW	11	21	14	37	8	6	DW100	88	67	52	14	6
DM	1	1	0	10	2	0	14	DM	7	7	0	71	14	0	DM100	92	85	85	14	0
DS	0	1	0	1	3	0	5	DS	0	20	0	20	60	0	DS100	100	80	60	60	0

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT							24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	19	15	6	5	0	0	43	N	44	35	13	11	0	0	N100	56	21	8	0	0
0 SW	14	12	10	5	1	0	42	SW	33	28	23	11	2	0	SW100	66	38	14	2	0
0 SS	10	9	2	0	5	0	26	SS	38	34	7	0	19	0	SS100	61	26	19	19	0
Z DW	5	9	5	5	1	0	21	DW	14	42	23	14	4	0	DW100	85	42	19	4	0
DM	1	0	1	2	0	0	4	DM	25	0	25	50	0	0	DM100	75	75	50	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 41.0N-45.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT							24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	39	31	13	7	1	0	91	N	42	34	14	7	1	0	N100	57	23	8	1	0
0 SW	24	21	9	10	4	1	69	SW	34	30	13	14	5	1	SW100	65	34	21	7	1
0 SS	12	11	7	12	1	0	43	SS	27	25	16	27	2	0	SS100	72	46	30	2	0
Z DW	12	10	8	8	2	1	41	DW	29	24	19	19	4	2	DW100	70	46	26	7	2
DM	2	1	2	1	1	0	7	DM	28	14	28	14	14	0	DM100	71	57	28	14	0
DS	2	0	0	1	0	0	3	DS	66	0	0	33	0	0	DS100	33	33	33	0	0

LATITUDE 45.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT							24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	28	11	6	3	0	0	48	N	58	22	12	6	0	0	N100	41	18	6	0	0
0 SW	11	8	5	6	0	0	30	SW	36	26	16	20	0	0	SW100	63	36	20	0	0
0 SS	6	7	1	2	0	0	16	SS	37	43	6	12	0	0	SS100	62	18	12	0	0
Z DW	4	5	3	3	0	0	15	DW	26	33	20	20	0	0	DW100	73	40	20	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT							24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	105	61	35	23	2	0	227	N	46	26	15	10	1	0	N100	53	26	11	1	0
0 SW	57	54	38	35	11	1	195	SW	29	27	19	17	5	1	SW100	73	43	23	5	1
0 SS	36	37	20	29	15	0	137	SS	26	27	14	21	10	0	SS100	73	46	32	10	0
Z DW	28	43	30	47	14	9	171	DW	16	25	17	27	8	5	DW100	83	58	40	13	5
DM	6	4	9	17	4	2	42	DM	14	9	21	40	9	4	DM100	86	76	54	14	4
DS	2	1	1	5	4	2	16	DS	12	6	6	37	25	12	DS100	87	81	75	37	12

Table 52

Change in Distribution of Parameter D
in 24 Hours from 12Z: April-June

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	8	1	1	0	0	0	10	N	80	10	10	0	0	0	N100	20	10	0	0	0
1 SW	2	4	5	4	1	0	16	SW	12	25	31	25	6	0	SW100	87	62	31	6	0
2 SS	1	3	3	3	2	0	12	SS	8	25	25	25	16	0	SS100	91	66	41	16	0
Z CW	3	3	4	7	7	0	24	CW	12	12	16	29	29	0	CW100	87	75	58	29	0
CM	0	1	4	2	2	2	11	CM	0	9	36	18	18	18	CM100	100	90	54	36	18
CS	0	1	0	2	2	0	5	CS	0	20	0	40	40	0	CS100	100	80	80	40	0

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	12	9	6	4	2	0	33	N	36	27	18	12	6	0	N100	63	36	18	6	0
1 SW	14	10	7	13	1	0	45	SW	31	22	15	28	2	0	SW100	68	46	31	2	0
2 SS	5	10	6	5	5	2	33	SS	15	30	18	15	15	6	SS100	84	54	36	21	6
Z CW	4	10	4	7	4	0	29	CW	13	34	13	24	13	0	CW100	86	51	37	13	0
CM	0	2	5	4	1	2	14	CM	0	14	35	28	7	14	CM100	100	85	50	21	14
CS	0	1	0	0	3	0	4	CS	0	25	0	0	75	0	CS100	100	75	75	75	0

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	24	12	7	7	0	1	51	N	47	23	13	13	0	1	N100	52	29	15	1	1
1 SW	11	9	2	9	0	0	31	SW	35	29	6	29	0	0	SW100	64	35	29	0	0
2 SS	3	3	2	2	1	0	11	SS	27	18	12	12	6	0	SS100	50	31	18	6	0
Z CW	5	4	3	5	0	0	17	CW	29	23	17	29	0	0	CW100	76	47	29	0	0
CM	0	0	0	0	1	0	1	CM	0	0	0	0	100	0	CM100	100	100	100	100	0
CS	0	0	0	1	0	0	1	CS	0	0	0	100	0	0	CS100	100	100	100	0	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	53	22	6	1	2	1	85	N	62	25	7	1	2	1	N100	37	11	4	3	1
1 SW	17	12	6	6	1	0	42	SW	40	28	14	14	2	0	SW100	69	30	16	2	0
2 SS	8	6	4	4	0	0	22	SS	36	27	18	18	0	0	SS100	63	36	18	0	0
Z CW	9	4	4	8	2	0	27	CW	33	14	14	29	7	0	CW100	66	51	37	7	0
CM	0	2	0	2	0	0	4	CM	0	50	0	50	0	0	CM100	100	50	50	0	0
CS	1	0	0	1	0	0	2	CS	50	0	0	50	0	0	CS100	50	50	50	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	24	5	4	3	0	1	37	N	64	13	11	8	0	2	N100	35	21	10	2	2
1 SW	8	4	0	0	0	0	12	SW	66	33	0	0	0	0	SW100	33	0	0	0	0
2 SS	3	1	0	0	0	0	4	SS	75	25	0	0	0	0	SS100	25	0	0	0	0
Z CW	1	1	0	0	0	0	2	CW	50	50	0	0	0	0	CW100	50	0	0	0	0
CM	0	1	0	0	0	0	1	CM	0	100	0	0	0	0	CM100	100	0	0	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	121	49	24	15	4	3	216	N	56	22	11	6	1	1	N100	43	21	10	3	1
1 SW	52	39	20	32	3	0	146	SW	35	26	13	21	2	0	SW100	64	37	27	2	0
2 SS	25	23	15	14	8	2	87	SS	28	26	17	16	9	2	SS100	71	44	27	11	2
Z CW	22	22	15	27	13	0	99	CW	22	22	15	27	13	0	CW100	77	55	40	13	0
CM	0	6	9	8	4	4	31	CM	0	19	29	25	12	12	CM100	100	80	51	25	12
CS	1	2	0	4	5	0	12	CS	8	16	0	33	41	0	CS100	91	75	75	41	0

Table 53

Change in Distribution of Parameter D in 12 Hours from 00Z: July-September

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER							PROFILES	12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	1	1	1	0	1	0	4	N	25	25	25	0	25	0	N100	75	50	25	25	0
0 SW	1	3	2	2	0	0	8	SW	12	37	25	25	0	0	SW100	87	50	25	0	0
0 SS	0	3	1	4	2	1	11	SS	0	27	9	36	18	9	SS100100		72	63	27	9
Z DW	2	4	1	11	7	3	28	DW	7	14	3	39	25	11	DW100		92	78	75	55	16
DM	1	1	4	15	9	5	32	DM	3	3	12	46	28	16	DM100		96	93	81	34	15
DS	3	0	2	7	4	14	30	DS	10	0	6	23	13	46	DS100		90	90	83	60	46

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER							PROFILES	12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	2	4	0	2	0	0	8	N	25	50	0	25	0	0	N100	75	25	25	0	0
0 SW	3	6	5	3	1	2	20	SW	15	30	25	15	5	10	SW100	85	55	30	15	10
0 SS	0	2	0	3	2	0	7	SS	0	28	0	42	28	0	SS100100		71	71	28	0
Z DW	2	8	9	16	6	2	43	DW	4	18	20	37	13	4	DW100		95	75	55	18	4
DM	3	5	6	4	2	2	22	DM	13	22	27	18	9	9	DM100		86	63	36	18	9
DS	0	1	2	2	2	0	7	DS	0	14	28	28	28	0	DS100100		86	57	28	0	

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER							PROFILES	12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	4	2	4	0	0	0	10	N	40	20	40	0	0	0	N100	60	40	0	0	0
0 SW	7	6	4	4	0	0	21	SW	33	28	19	19	0	0	SW100	66	38	19	0	0
0 SS	4	3	5	3	0	0	15	SS	26	20	33	20	0	0	SS100	73	53	20	0	0
Z DW	1	8	1	7	5	1	23	DW	4	34	4	30	21	4	DW100		96	60	56	26	4
DM	1	0	1	3	2	0	7	DM	14	0	14	42	28	0	DM100		85	85	71	28	0
DS	0	1	2	1	0	0	4	DS	0	25	50	25	0	0	DS100100		75	25	0	0	

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER							PROFILES	12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	27	13	4	3	0	0	47	N	57	27	8	6	0	0	N100	42	14	6	0	0
0 SW	14	16	9	10	3	0	46	SW	30	21	19	21	6	0	SW100	69	47	28	6	0
0 SS	8	5	5	6	3	0	27	SS	29	18	18	22	11	0	SS100		70	51	33	11	0
Z DW	7	5	9	5	4	1	34	DW	20	23	26	14	11	2	DW100		79	55	29	14	2
DM	2	0	0	4	0	0	6	DM	33	0	0	66	0	0	DM100		66	66	66	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS		0	0	0	0	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER							PROFILES	12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	18	3	2	1	0	0	24	N	75	12	8	4	0	0	N100	25	12	4	0	0
0 SW	7	7	2	2	2	0	20	SW	35	35	10	10	10	0	SW100	65	30	20	10	0
0 SS	0	1	1	2	0	0	4	SS	0	25	25	50	0	0	SS100100		75	50	0	0
Z DW	4	3	4	4	2	0	17	DW	23	17	23	23	11	0	DW100		76	58	35	11	0
DM	1	0	0	1	0	0	2	DM	50	0	0	50	0	0	DM100		50	50	50	0	0
DS	0	0	1	0	0	0	1	DS	0	0	100	0	0	0	DS100	100	100	0	0	0	

LATITUDE 29.0N-51.0N

	12 HRS LATER-NUMBER							PROFILES	12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS		N	SW	SS	DW	DM	DS
N	52	23	11	6	1	0	93	N	55	24	11	6	1	0	N100	44	19	7	1	0
0 SW	32	32	22	21	6	2	115	SW	27	27	19	18	5	1	SW100	72	44	25	6	1
0 SS	12	14	12	18	7	1	64	SS	18	21	18	28	10	1	SS100	81	59	40	12	1
Z DW	16	31	24	43	24	7	145	DW	11	21	16	29	16	4	DW100	84	67	51	21	4	
DM	8	6	11	27	10	7	69	DM	11	8	15	39	14	10	DM100	88	79	63	24	10	
DS	3	2	7	10	6	14	42	DS	7	4	16	23	14	33	DS100	92	88	71	47	33	

Table 54

Change in Distribution of Parameter D in 12 Hours from 12Z: July-September

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	1	2	1	1	1	1	7	N	14	28	14	14	14	14	N	100	85	57	42	28	14
1 SW	0	2	1	4	4	1	12	SW	0	16	8	33	33	8	SW	100	100	83	75	41	8
2 SS	0	1	1	5	1	2	10	SS	0	10	10	50	10	20	SS	100	100	90	80	30	20
Z CW	1	0	4	11	15	9	40	CW	2	0	10	27	37	22	CW	100	97	97	87	60	22
CM	0	2	0	3	9	6	20	CM	0	10	0	15	45	30	CM	100	100	90	90	75	30
CS	1	1	1	2	8	8	21	CS	4	4	4	9	38	38	CS	100	95	90	85	76	38

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	3	6	0	1	1	0	11	N	27	54	0	9	9	0	N	100	72	18	18	9	0
1 SW	4	5	4	8	8	0	29	SW	13	17	13	27	27	0	SW	100	86	68	55	27	0
2 SS	2	7	2	12	0	0	23	SS	8	30	8	52	0	0	SS	100	91	60	52	0	0
Z CW	0	3	3	18	8	1	33	CW	0	9	9	54	24	3	CW	100	100	90	81	27	3
CM	0	1	1	4	4	1	11	CM	0	9	9	36	36	9	CM	100	100	90	81	45	9
CS	0	1	0	0	2	2	5	CS	0	20	0	0	40	40	CS	100	100	80	80	80	40

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	3	3	4	3	1	0	14	N	21	21	28	21	7	0	N	100	79	57	28	7	0
1 SW	5	3	5	3	1	0	17	SW	29	17	29	17	5	0	SW	100	71	52	23	5	0
2 SS	4	4	4	4	1	0	17	SS	23	23	23	23	5	0	SS	100	76	52	29	5	0
Z CW	0	4	4	8	6	1	23	CW	0	17	17	34	26	4	CW	100	100	82	65	30	4
CM	0	1	2	3	1	2	9	CM	0	11	22	33	11	22	CM	100	100	88	66	33	22
CS	0	0	0	1	0	0	1	CS	0	0	0	100	0	0	CS	100	100	100	100	0	0

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	25	18	10	8	3	0	64	N	39	28	15	12	4	0	N	100	60	32	17	4	0
1 SW	8	14	6	9	3	0	40	SW	20	35	15	22	7	0	SW	100	80	45	30	7	0
2 SS	7	6	4	10	0	0	27	SS	25	22	14	37	0	0	SS	100	74	51	37	0	0
Z CW	5	6	3	9	0	0	23	CW	21	26	13	39	0	0	CW	100	78	52	39	0	0
CM	1	1	3	1	2	0	8	CM	12	12	37	12	25	0	CM	100	87	75	37	25	0
CS	0	0	0	0	1	0	1	CS	0	0	0	0	100	0	CS	100	100	100	100	100	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	18	5	2	5	1	0	31	N	60	16	6	16	0	0	N	100	40	23	16	0	0
1 SW	2	5	1	4	0	0	12	SW	16	41	8	33	0	0	SW	100	83	41	33	0	0
2 SS	0	4	2	3	1	0	9	SS	0	44	22	33	0	0	SS	100	100	55	33	0	0
Z CW	1	4	3	2	0	0	10	CW	10	40	30	20	0	0	CW	100	90	50	20	0	0
CM	0	1	0	1	0	0	2	CM	0	50	0	50	0	0	CM	100	100	50	50	0	0
CS	0	0	0	0	0	0	0	CS	0	0	0	0	0	0	CS	0	0	0	0	0	0

LATITUDE 29.0N-51.0N

	12 HRS LATER-NUMBER PROFILES								12 HRS LATER-PERCENT							12 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS		N	SW	SS	CW	CM	CS
N	50	34	17	18	6	1	126	N	39	26	13	14	4	1	N	100	60	33	19	5	0
1 SW	19	29	17	28	16	1	110	SW	17	26	15	25	14	0	SW	100	82	56	41	15	0
2 SS	13	22	13	34	2	2	86	SS	15	26	15	39	2	2	SS	100	84	59	44	4	2
Z CW	7	17	17	48	29	11	129	CW	5	13	13	37	22	9	CW	100	94	81	68	31	9
CM	1	6	6	12	16	9	50	CM	2	12	12	24	32	18	CM	100	98	86	74	50	18
CS	1	2	1	3	11	11	29	CS	3	7	3	10	38	38	CS	100	96	89	86	75	38

Table 55

Change in Distribution of Parameter D in 24 Hours from 00Z: July-September

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	0	1	0	2	0	1	4	N	0	25	0	50	0	25	N100	100	75	75	25	25
0 SW	0	2	0	1	3	0	6	SW	0	33	0	16	50	0	SW100	100	66	66	50	0
0 SS	1	1	1	2	4	1	10	SS	10	10	10	20	40	10	SS100	90	80	70	50	10
Z DW	1	0	5	7	11	6	31	DW	3	0	19	22	35	19	DW100	96	96	77	54	19
DM	1	1	5	6	8	7	28	DM	3	3	17	21	28	25	DM100	96	92	75	53	25
DS	1	1	1	3	10	8	30	DS	3	3	3	10	33	26	DS100	96	93	90	60	26

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	1	1	1	6	0	0	9	N	11	11	11	66	0	0	N100	88	77	66	0	0
0 SW	3	4	4	4	3	0	18	SW	16	22	22	22	16	0	SW100	83	61	38	16	0
0 SS	1	0	1	5	3	1	11	SS	9	0	9	45	27	9	SS100	90	90	81	36	9
Z DW	2	11	4	12	10	3	42	DW	4	26	9	28	23	7	DW100	95	69	59	30	7
DM	1	4	0	8	2	2	17	DM	5	23	0	47	11	11	DM100	94	70	70	23	11
DS	0	0	1	2	1	0	4	DS	0	0	25	50	25	0	DS100	100	100	75	25	0

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	1	3	0	4	1	0	12	N	8	25	25	33	8	0	N100	91	66	41	8	0
0 SW	3	3	4	6	3	1	20	SW	15	32	14	28	10	5	SW100	85	57	42	14	5
0 SS	3	4	2	2	1	2	14	SS	21	28	14	14	7	14	SS100	78	50	35	21	14
Z DW	3	5	6	11	2	2	32	DW	9	16	25	34	6	6	DW100	90	71	46	12	6
DM	2	0	3	2	4	1	12	DM	16	0	25	16	33	8	DM100	83	83	58	41	8
DS	1	1	0	1	1	0	4	DS	25	25	0	25	25	0	DS100	75	50	50	25	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	22	12	7	7	1	0	49	N	44	24	14	14	2	0	N100	55	30	16	2	0
0 SW	12	19	7	18	3	0	59	SW	20	32	11	30	5	0	SW100	79	47	35	5	0
0 SS	6	7	5	4	1	0	23	SS	26	30	21	17	4	0	SS100	73	43	21	4	0
Z DW	15	11	4	9	4	0	41	DW	37	26	9	21	9	0	DW100	63	41	31	9	0
DM	0	1	3	2	0	0	6	DM	0	16	50	33	0	0	DM100	100	83	33	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	16	8	2	2	0	1	29	N	55	27	6	6	0	3	N100	44	17	10	3	3
0 SW	7	9	5	4	0	0	25	SW	28	36	20	16	0	0	SW100	72	36	16	0	0
0 SS	0	0	4	2	0	0	6	SS	0	0	66	33	0	0	SS100	100	100	33	0	0
Z DW	1	5	0	4	1	0	12	DW	8	50	0	33	8	0	DW100	91	41	41	8	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	1	0	0	0	0	1	DS	0100	0	0	0	0	DS100	0	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	40	25	13	21	2	2	103	N	38	24	12	20	1	1	N100	61	36	24	3	1
0 SW	25	43	20	35	12	1	136	SW	18	31	14	25	8	1	SW100	81	50	35	9	0
0 SS	11	12	13	15	9	4	64	SS	17	18	20	23	14	6	SS100	82	64	43	20	6
Z DW	20	34	22	43	20	11	150	DW	12	21	13	27	17	6	DW100	87	65	51	24	6
DM	4	6	11	15	14	13	63	DM	5	9	17	24	22	19	DM100	93	84	66	38	15
DS	2	3	2	12	12	8	39	DS	5	7	5	30	30	20	DS100	94	87	82	51	20

Table 56

Change in Distribution of Parameter D
in 24 Hours from 12Z: July-September

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	2	2	1	1	3	[illegible]	9	N	22	22	11	11	33	0	N100	77	55	44	33	0
1 SW	1	1	3	6	2	1	14	SW	7	7	21	42	14	7	SW100	92	85	64	21	7
2 SS	1	2	0	8	0	2	13	SS	7	15	0	61	0	15	SS100	92	76	76	15	15
Z DW	2	4	3	17	5	6	37	DW	5	10	8	45	13	16	DW100	94	83	75	29	16
DM	1	0	3	7	3	5	19	DM	5	0	15	36	15	26	DM100	94	94	78	42	26
DS	1	3	0	4	6	12	26	DS	3	11	0	15	23	46	DS100	96	84	84	69	46

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	2	3	3	2	0	0	10	N	20	30	30	20	0	0	N100	80	50	20	0	0
1 SW	4	13	5	4	2	0	28	SW	14	46	17	14	7	0	SW100	86	39	21	7	0
2 SS	1	3	6	8	2	1	21	SS	4	14	28	38	9	4	SS100	95	80	52	14	4
Z DW	1	6	6	10	5	4	32	DW	3	18	18	31	15	12	DW100	96	78	59	28	12
DM	1	1	1	4	1	1	9	DM	11	11	11	44	11	11	DM100	88	77	66	22	11
DS	0	1	2	2	1	1	7	DS	0	14	28	28	14	14	DS100	100	85	57	28	14

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	5	3	5	1	1	0	15	N	33	20	33	6	6	0	N100	66	46	13	6	0
1 SW	1	5	5	1	0	0	12	SW	8	41	41	8	0	0	SW100	91	50	8	0	0
2 SS	2	6	3	2	0	[illegible]	13	SS	15	46	23	15	[illegible]	0	SS100	84	38	15	[illegible]	0
Z DW	1	3	1	6	3	0	14	DW	7	21	7	42	21	0	DW100	92	71	64	21	0
DM	0	0	2	3	2	0	7	DM	0	0	28	42	28	0	DM100	100	100	71	28	0
DS	0	0	0	1	0	0	1	DS	0	0	0	100	0	0	DS100	100	100	100	0	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	27	15	10	5	1	0	58	N	46	25	17	8	1	0	N100	53	27	10	1	0
1 SW	12	13	4	7	3	0	39	SW	30	33	10	17	7	0	SW100	69	35	25	7	0
2 SS	3	6	4	5	3	1	22	SS	13	27	18	22	13	4	SS100	86	59	40	18	4
Z DW	6	5	5	8	1	0	25	DW	24	20	20	32	4	0	DW100	76	56	36	4	0
DM	1	4	0	2	0	0	7	DM	14	57	0	28	0	0	DM100	85	28	28	0	0
DS	0	0	0	1	0	0	1	DS	0	0	0	100	0	0	DS100	100	100	100	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	17	6	1	2	0	[illegible]	26	N	65	23	3	7	0	0	N100	34	11	7	[illegible]	0
1 SW	5	4	2	0	0	0	11	SW	45	36	18	0	0	0	SW100	54	18	0	0	0
2 SS	3	1	0	4	1	0	9	SS	33	11	0	44	11	0	SS100	66	33	55	11	0
Z DW	1	1	1	3	2	0	8	DW	12	12	12	37	25	0	DW100	87	75	62	25	0
DM	1	0	1	0	0	1	3	DM	33	0	33	0	0	33	DM100	66	66	33	33	33
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	53	29	20	11	5	0	118	N	44	24	16	9	4	0	N100	55	30	13	4	0
1 SW	23	36	19	18	7	1	104	SW	22	34	18	17	6	0	SW100	77	43	25	7	0
2 SS	10	18	13	27	6	4	78	SS	12	23	16	34	7	5	SS100	87	64	47	12	5
Z DW	11	19	16	44	16	10	116	DW	9	16	13	37	13	8	DW100	91	74	61	22	8
DM	4	5	7	16	6	7	45	DM	8	11	15	35	13	15	DM100	91	80	64	28	15
DS	1	4	2	8	7	13	35	DS	2	11	5	22	20	37	DS100	97	85	80	57	37

Table 57

Change in Distribution of Parameter D in 12 Hours from 00Z: October-December

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	1	2	4	2	0	0	9	N	11	22	44	22	0	0	N100	88	66	22	0	0
0 SW	0	2	5	2	0	0	9	SW	0	22	55	22	0	0	SW100	100	77	22	0	0
0 SS	1	1	2	5	0	0	10	SS	10	10	20	50	0	0	SS100	90	80	60	0	0
Z DW	1	3	2	6	6	2	20	DW	5	15	10	30	30	10	DW100	95	80	70	40	10
DM	0	0	0	1	4	3	12	DM	0	0	33	8	33	25	DM100	100	100	66	58	25
DS	0	0	1	3	1	1	6	DS	0	0	16	50	16	16	DS100	100	100	83	33	16

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	4	2	2	3	1	0	12	N	33	16	16	25	8	0	N100	66	50	33	8	0
0 SW	6	2	4	3	1	0	16	SW	37	12	25	18	5	3	SW100	62	50	25	6	0
0 SS	5	1	3	5	1	0	15	SS	33	6	20	33	6	0	SS100	66	60	40	6	0
Z DW	2	4	5	10	4	2	27	DW	7	14	18	37	14	7	DW100	92	77	59	22	7
DM	1	1	2	2	1	2	9	DM	11	11	22	22	11	22	DM100	88	77	55	33	22
DS	0	0	0	0	1	2	3	DS	0	0	0	0	33	66	DS100	100	100	100	100	66

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	6	5	1	0	0	0	12	N	50	41	8	0	0	0	N100	50	8	0	0	0
0 SW	10	6	5	3	0	0	24	SW	41	25	20	12	0	0	SW100	58	33	12	0	0
0 SS	2	0	5	4	1	1	13	SS	15	0	38	30	7	7	SS100	84	84	46	15	7
Z DW	4	3	4	10	2	0	23	DW	17	13	17	43	8	0	DW100	82	69	52	8	0
DM	0	0	0	4	2	0	6	DM	0	0	0	66	33	0	DM100	100	100	100	33	0
DS	0	1	0	0	0	0	1	DS	100	0	0	0	0	0	DS100	100	0	0	0	0

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	26	9	2	2	1	1	40	N	65	22	5	5	0	2	N100	35	12	7	2	2
0 SW	13	12	5	4	1	0	33	SW	39	36	9	12	3	0	SW100	61	24	15	3	0
0 SS	7	5	4	2	0	1	20	SS	35	30	20	10	0	5	SS100	65	35	15	5	5
Z DW	1	5	1	4	1	0	12	DW	8	41	8	33	8	0	DW100	91	50	41	8	0
DM	0	0	0	0	1	0	1	DM	0	0	0	0100	0	0	DM100	100	100	100	100	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	10	2	0	4	0	0	16	N	62	12	0	25	0	0	N100	37	25	25	0	0
0 SW	6	3	3	2	0	0	14	SW	42	21	21	14	0	0	SW100	57	35	14	0	0
0 SS	0	2	1	1	0	0	4	SS	0	50	25	25	0	0	SS100	100	50	25	0	0
Z DW	2	2	0	2	0	1	7	DW	28	28	0	28	0	14	DW100	71	42	42	14	14
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 29.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	47	20	9	11	1	1	89	N	52	22	10	12	1	1	N100	47	24	14	2	1
0 SW	35	25	20	14	2	0	96	SW	36	26	20	14	2	0	SW100	63	37	16	2	0
0 SS	15	10	15	18	2	2	62	SS	24	16	24	29	3	3	SS100	75	59	35	6	3
Z DW	11	17	12	32	13	5	89	DW	11	19	13	35	14	5	DW100	88	69	56	20	5
DM	1	1	6	7	8	5	28	DM	3	3	21	25	28	17	DM100	96	92	71	46	17
DS	0	1	1	3	2	3	10	DS	0	10	10	30	20	30	DS100	100	90	80	50	30

Table 58

Change in Distribution of Parameter D
in 12 Hours from 12Z: October-December

LATITUDE 29.0N-34.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	1	1	1	0	0	0	3	N	33	33	33	0	0	0	N100	66	33	0	0	0
1 SW	2	1	3	1	0	0	7	SW	28	14	42	14	0	0	SW100	71	57	14	0	0
2 SS	2	4	4	4	3	0	17	SS	11	23	23	23	17	0	SS100	88	64	41	17	0
Z DW	2	1	4	6	3	2	18	DW	11	5	22	33	16	11	DW100	88	83	61	27	11
DM	0	3	1	4	2	2	12	DM	0	25	8	33	16	16	DM100	100	75	66	33	16
DS	0	0	0	3	4	2	9	DS	0	0	0	33	44	22	DS100	100	100	100	66	22

LATITUDE 34.5N-37.5N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	4	7	1	2	1	0	15	N	26	46	6	13	6	0	N100	73	26	20	6	0
1 SW	1	3	3	5	0	0	12	SW	8	25	25	41	0	0	SW100	91	66	41	0	0
2 SS	4	3	3	4	1	0	15	SS	26	20	20	26	6	0	SS100	73	53	33	6	0
Z DW	3	6	2	11	3	0	25	DW	12	24	8	44	12	0	DW100	88	64	56	12	0
DM	1	3	0	1	2	0	7	DM	14	42	0	14	28	0	DM100	85	42	42	28	0
DS	0	1	0	3	0	3	7	DS	0	14	0	42	0	42	DS100	100	85	85	42	42

LATITUDE 37.5N-41.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	8	5	4	3	0	0	20	N	40	25	20	15	0	0	N100	60	35	15	0	0
1 SW	3	4	3	2	0	0	12	SW	25	33	25	16	0	0	SW100	75	41	16	0	0
2 SS	2	4	2	9	1	0	18	SS	11	22	11	50	5	0	SS100	88	66	55	5	0
Z DW	3	5	4	11	1	0	24	DW	12	20	16	45	4	0	DW100	87	66	50	4	0
DM	0	0	1	1	1	0	3	DM	0	0	33	33	33	0	DM100	100	100	66	33	0
DS	0	0	0	0	1	0	1	DS	0	0	0	0	100	0	DS100	100	100	100	100	0

LATITUDE 41.0N-46.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	28	17	4	3	1	0	52	N	53	32	7	5	2	0	N100	46	13	5	0	0
1 SW	7	6	5	4	0	0	22	SW	31	27	22	18	0	0	SW100	68	40	18	0	0
2 SS	3	6	4	2	0	0	15	SS	20	40	26	13	0	0	SS100	80	40	13	0	0
Z DW	1	6	4	4	2	0	17	DW	6	35	23	23	11	0	DW100	94	58	35	11	0
DM	0	3	0	1	0	0	4	DM	0	75	0	25	0	0	DM100	100	25	25	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 46.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	16	4	2	1	1	0	24	N	66	16	8	4	4	0	N100	33	16	8	4	0
1 SW	4	2	0	0	0	0	6	SW	66	33	0	0	0	0	SW100	33	0	0	0	0
2 SS	1	3	0	2	0	0	6	SS	16	50	0	33	0	0	SS100	83	33	33	0	0
Z DW	1	3	2	2	0	0	8	DW	12	37	25	25	0	0	DW100	87	50	25	0	0
DM	0	0	0	0	0	0	0	DM	0	0	0	0	0	0	DM	0	0	0	0	0
DS	2	0	0	0	0	0	2	DS	100	0	0	0	0	0	DS100	0	0	0	0	0

LATITUDE 29.0N-51.0N

	12 HRS LATER-NUMBER PROFILES							12 HRS LATER-PERCENT						12 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	57	34	12	9	2	0	114	N	50	29	10	7	1	0	N100	50	20	9	1	0
1 SW	17	16	14	12	0	0	59	SW	28	27	23	20	0	0	SW100	71	44	20	0	0
2 SS	12	20	13	21	5	0	71	SS	16	28	18	29	7	0	SS100	83	54	36	7	0
Z DW	10	21	16	34	9	2	92	DW	10	22	17	36	9	2	DW100	89	66	48	11	2
DM	1	9	2	7	5	2	26	DM	3	34	7	26	19	7	DM100	96	61	53	26	7
DS	2	1	0	6	5	5	19	DS	10	5	0	31	26	26	DS100	89	84	84	52	26

Table 59

Change in Distribution of Parameter D in 24 Hours from 00Z: October-December

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	3	1	2	1	1	0	8	N	37	12	25	12	12	0	N100	62	50	25	12	0
0 SW	1	2	5	0	1	0	10	SW	10	20	60	0	10	0	SW100	90	70	10	10	0
0 SS	3	0	1	5	1	1	12	SS	25	0	8	50	8	8	SS100	75	75	66	16	8
Z DW	1	5	2	4	5	1	19	DW	5	31	10	21	26	5	DW100	94	63	52	31	5
DM	1	1	0	5	4	2	14	DM	7	7	0	42	28	14	DM100	92	85	85	42	14
DS	0	1	1	1	0	2	5	DS	0	20	20	20	0	40	DS100	100	80	60	40	40

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	6	2	1	5	2	0	16	N	37	12	6	31	12	0	N100	62	50	43	12	0
0 SW	5	5	2	5	1	0	18	SW	27	27	11	27	5	0	SW100	72	44	33	5	0
0 SS	1	2	1	9	0	0	13	SS	7	15	7	69	0	0	SS100	92	76	69	0	0
Z DW	2	11	3	13	4	1	34	DW	5	32	8	38	11	2	DW100	94	61	52	14	2
DM	2	0	1	3	2	1	9	DM	22	0	11	33	22	11	DM100	77	77	66	33	11
DS	0	0	0	1	0	1	2	DS	0	0	0	50	0	50	DS100	100	100	100	50	50

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	5	6	6	1	0	0	18	N	27	33	33	5	0	0	N100	72	33	5	0	0
0 SW	6	4	5	5	0	0	20	SW	30	20	25	25	0	0	SW100	70	50	25	0	0
0 SS	4	4	0	1	1	0	13	SS	30	30	23	7	7	0	SS100	69	38	15	7	0
Z DW	2	5	3	7	3	1	21	DW	9	23	14	33	14	4	DW100	90	66	52	19	4
DM	0	0	1	4	1	0	6	DM	0	0	16	66	16	0	DM100	100	100	83	16	0
DS	0	0	1	0	0	0	1	DS	0	0	100	0	0	0	DS100	100	100	0	0	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	25	11	5	2	0	0	43	N	58	25	11	4	0	0	N100	41	16	4	0	0
0 SW	13	15	10	4	1	0	43	SW	30	34	23	9	2	0	SW100	69	34	11	2	0
0 SS	5	10	2	3	0	0	20	SS	25	50	10	15	0	0	SS100	75	25	15	0	0
Z DW	7	2	0	5	2	0	16	DW	43	12	0	31	12	0	DW100	56	43	43	12	0
DM	1	3	0	0	0	0	4	DM	25	75	0	0	0	0	DM100	75	0	0	0	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	13	5	4	2	0	0	24	N	54	20	16	8	0	0	N100	45	25	8	0	0
0 SW	8	5	1	6	0	0	18	SW	44	16	5	33	0	0	SW100	55	38	33	0	0
0 SS	2	3	2	1	0	0	8	SS	25	37	25	12	0	0	SS100	75	37	12	0	0
Z DW	4	5	2	0	0	0	11	DW	36	45	18	0	0	0	DW100	63	18	0	0	0
DM	0	0	0	0	1	0	1	DM	0	0	0	0	100	0	DM100	0	0	0	100	0
DS	0	0	0	0	0	0	0	DS	0	0	0	0	0	0	DS	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	DW	DM	DS	TOT		N	SW	SS	DW	DM	DS	N	SW	SS	DW	DM	DS
N	52	25	18	11	3	0	109	N	47	22	16	10	2	0	N100	52	29	12	2	0
0 SW	33	29	24	20	3	0	109	SW	30	26	22	18	2	0	SW100	69	43	21	2	0
0 SS	15	19	9	20	2	1	66	SS	22	28	13	30	3	1	SS100	77	48	34	4	1
Z DW	19	29	16	29	14	5	111	DW	16	26	9	26	13	4	DW100	84	55	45	16	4
DM	4	4	2	18	6	0	34	DM	11	11	5	53	18	0	DM100	88	76	70	32	0
DS	0	1	2	2	0	3	8	DS	0	12	25	25	0	37	DS100	100	87	62	37	37

Table 60

Change in Distribution of Parameter D
in 24 Hours from 12Z: October-December

LATITUDE 29.0N-34.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	0	0	0	1	0	0	1	N	0	0	0	100	0	0	N100	100	100	100	0	0
1 SW	0	1	2	3	0	0	6	SW	0	16	33	50	0	0	SW100	100	83	50	0	0
2 SS	1	2	3	4	0	1	11	SS	9	18	27	36	0	9	SS100	90	72	45	9	9
Z CW	0	1	3	6	8	0	18	CW	0	5	16	33	44	0	CW100	100	94	77	44	0
CM	0	2	3	3	4	4	16	CM	0	12	18	18	25	25	CM100	100	87	68	50	25
CS	0	0	1	2	3	1	7	CS	0	0	14	28	42	14	CS100	100	100	85	57	14

LATITUDE 34.5N-37.5N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	6	1	0	3	0	0	10	N	60	10	0	30	0	0	N100	40	30	30	0	0
1 SW	2	2	2	2	3	0	11	SW	18	18	18	18	27	0	SW100	81	63	45	27	0
2 SS	4	1	4	5	2	1	17	SS	23	5	23	29	11	5	SS100	76	70	47	17	5
Z CW	2	3	6	8	3	1	23	CW	8	13	26	34	13	4	CW100	91	78	52	17	4
CM	0	1	3	1	0	1	6	CM	0	16	50	16	0	16	CM100	100	83	33	16	16
CS	1	1	2	1	1	1	7	CS	14	14	28	14	14	42	CS100	85	71	71	57	42

LATITUDE 37.5N-41.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	11	6	6	2	0	0	25	N	44	24	24	8	0	0	N100	56	32	8	0	0
1 SW	5	1	5	2	1	0	14	SW	35	7	35	14	7	0	SW100	64	57	21	7	0
2 SS	3	4	5	3	0	0	17	SS	29	23	29	17	0	0	SS100	70	47	17	0	0
Z CW	2	4	3	8	0	1	18	CW	11	22	16	44	0	5	CW100	88	66	50	5	5
CM	2	0	1	1	0	0	4	CM	50	0	25	25	0	0	CM100	50	50	25	0	0
CS	0	0	0	0	1	0	1	CS	0	0	0	0	100	0	CS100	100	100	100	100	0

LATITUDE 41.0N-46.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	18	9	4	4	0	0	35	N	51	25	11	11	0	0	N100	48	22	11	0	0
1 SW	9	3	2	2	1	0	17	SW	52	17	11	11	5	0	SW100	47	29	17	5	0
2 SS	3	2	3	1	0	0	9	SS	33	22	33	11	0	0	SS100	66	44	11	0	0
Z CW	1	5	2	5	1	0	14	CW	7	35	14	35	7	0	CW100	92	57	42	7	0
CM	2	1	0	0	0	0	3	CM	66	33	0	0	0	0	CM100	33	0	0	0	0
CS	1	0	0	0	0	0	1	CS	100	0	0	0	0	0	CS100	0	0	0	0	0

LATITUDE 46.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	11	3	0	2	0	0	16	N	68	18	0	12	0	0	N100	31	12	12	0	0
1 SW	1	0	1	1	0	0	3	SW	33	0	33	33	0	0	SW100	66	66	33	0	0
2 SS	1	0	0	2	0	0	3	SS	33	0	0	66	0	0	SS100	66	66	66	0	0
Z CW	2	2	2	1	0	1	8	CW	25	25	25	12	0	12	CW100	75	50	25	12	12
CM	0	0	0	0	0	0	0	CM	0	0	0	0	0	0	CM	0	0	0	0	0
CS	2	0	0	0	0	0	2	CS	100	0	0	0	0	0	CS100	0	0	0	0	0

LATITUDE 29.0N-51.0N

	24 HRS LATER-NUMBER PROFILES							24 HRS LATER-PERCENT						24 HRS LATER-CUM.PER					
	N	SW	SS	CW	CM	CS	TOT		N	SW	SS	CW	CM	CS	N	SW	SS	CW	CM	CS
N	46	19	10	12	0	0	87	N	52	21	11	13	0	0	N100	47	25	13	0	0
1 SW	17	7	12	10	5	0	51	SW	33	13	23	19	9	0	SW100	66	52	29	9	0
2 SS	14	9	15	15	2	2	57	SS	24	15	26	26	3	3	SS100	75	59	33	7	3
Z CW	7	15	16	28	12	3	81	CW	8	18	19	34	14	3	CW100	91	72	53	18	3
CM	4	4	7	5	4	5	29	CM	13	13	24	17	13	17	CM100	86	72	48	31	17
CS	4	1	1	3	5	4	18	CS	22	5	5	16	27	22	CS100	77	72	66	50	22

APPENDIX

CDC 3100 Refractive Index Format (24 bits/word)
Variable Number of Records/Report

1st Record

Word	1	0001 octal
	2	ship number
	3	date (year*10000+month*100+day)
	4	hour
	5	latitude, longitude (lat*100+long) (whole degrees)

J Records (J is number of levels)

Word	1	0001 octal
	2	Refractive Index N value (J)
	3	Refractive Index M value (J)
	4	height meters (J)

K Records (K is the maximum of the number of traps, number of super-refractive layers, and the number of sub-refractive layers. If all three are zero there are no records of this type.)

Word	1	0001 octal
	2	ship number
	3	latitude
	4	longitude
	5	date
	6	hour
	7	number of traps
	8	number of super-refractive layers
	9	number of sub-refractive layers
	10	duct bottom (K)
	11	trap bottom (K)
	12	trap top (K)
	13	trap intensity (K)
	14	super-refractive intensity (K)
	15	super-refractive bottom (K)
	16	super-refractive top (K)
	17	sub-refractive bottom (K)
	18	sub-refractive top (K)
	19	weather 1
	20	weather 2
	21	weather 3

CDC 6500 Refractive Index Format (60 bits/word)
One Record/Report

Word	1	ship number
	2	latitude (lat degrees*100+lat minutes)
	3	longitude (long degrees*100+long minutes)
	4	date (yr*10000+month*100+day)
	5	hour
	6	number of levels--NOL
	7	weather 1
	8	weather 2
	9	weather 3
	10	zero
	A	height (meters)
	B	refractive index N value
	C	refractive index M value

Words A B C repeated for J = 1, NOL

D	number of traps NT
E	number of super-refractive layers NS
F	number of sub-refractive layers NB
G	duct bottom
H	trap bottom
O	trap top
P	trap intensity

Words G H O P repeated for K = 1, NT

Q	super-refractive bottom
R	super-refractive top
S	super-refractive intensity

Words Q R S repeated for L = 1, NS

T	sub-refractive bottom
U	sub-refractive top

Words T W repeated for M = 1, NB

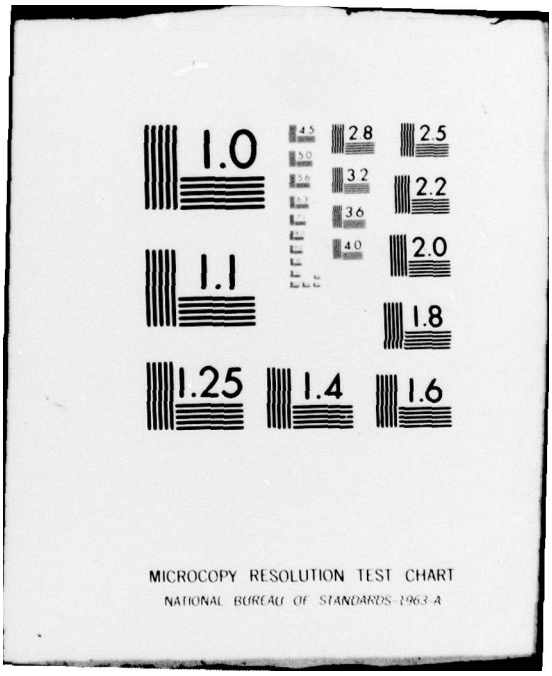
V	weather 1
W	weather 2
X	weather 3

AD-A073 341 METEOROLOGY INTERNATIONAL INC MONTEREY CALIF F/G 4/2
DEVELOPMENT OF A SYNOPTIC CLIMATOLOGY OF TROPOSPHERIC REFRACTIV--ETC(U)
APR 77 P P KALINYAK N00228-76-C-3139
UNCLASSIFIED MII-M-226 NEPRF-TR-2-77 (MII) NL

3 OF 3
AD A073 341



END
DATE FILMED
10-79
DDC


1.0
1.1
1.25
1.4
1.6
2.8
3.2
3.6
4.0
2.5
2.2
2.0
1.8
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Standardized Format for RI Data (60 bits/word)

Each report is one record.

1st Word - Bit	0	1 bit	blank
	1 to 4	4 bits	year - 56
	5 to 8	4 bits	month
	9 to 13	5 bits	day
	14 to 15	2 bits	hour (0, 00Z; 3, 12Z)
	16 to 23	8 bits	latitude in tenths - 280
	24 to 31	8 bits	longitude in tenths - 1200
	32 to 44	13 bits	ship number
	45 to 47	3 bits	number of traps (K)
	48 to 50	3 bits	number of super-refractive (KS)
	51 to 53	3 bits	number of sub-refractive (KN)
	54 to 59	6 bits	number of levels (NOL)

2nd Word to (1+(NOL+1)/2) Word

Bit	0 to 14	15 bits	N parameter I level
	15 to 29	15 bits	height meters I level
	30 to 44	15 bits	N parameter (I+1) level
	45 to 59	15 bits	height meters (I+1) level

The levels are followed by 1 word for each trap then 1 word for each super-refractive layer then 1 word for each sub-refractive layer in the following formats:

	15 bits	15 bits	15 bits	15 bits
Traps	intensity	base duct	base trap	top trap
Super-refractive	intensity	blank	base layer	top layer
Sub-refractive	blank		base layer	top layer

The intensity is the same delta N value as were on the 3100 and 6500 old formats.

The RI layer data is followed by the S parameter and then the D parameter, each scaled binary thirty.

Basic Flow Chart of Computer Program Used to Produce the Monthly Climatologies of Refractive Conditions

